Bloomberg Businessweek

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Bloomberg Businessweek

March 20, 2023



◀ Demar-Trans and its drivers—such as Andrzej Sokalski, seen here in a company truck in Boleslawiec, Poland—are giving Sennder a try

PHOTOGRAPH BY FELIX BRÜGGEMANN FOR BLOOMBERG BUSINESSWEEK

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■ COVER TRAIL

How the cover gets made

❶

"You guessed it—SVB! Not sure if it's a blip, a crisis or what, but everyone's talking about it."

"It's time to talk less and visualize more."

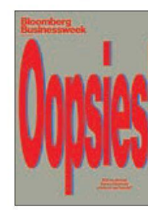
❷



"It's funny, but are *we* the sheep? Or are the bank's customers?"

"I suppose it's vaguely pejorative."

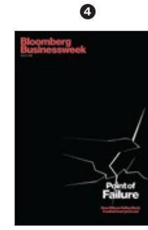
❸



"Cute! But I have no idea what the story's about."

"Isn't that what your, um, words are for?"

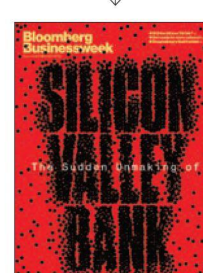
❹



"Elegant…but it doesn't *say* SVB, y'know?"

"Ohhhh, so you want it to *say* SVB? I can do that."

↓



Cover:
Illustration by Jordi Ng

ECONOMICS: PHOTOGRAPH BY DARRON R. SILVA FOR BLOOMBERG BUSINESSWEEK. SHEEP: GETTY IMAGES

Google

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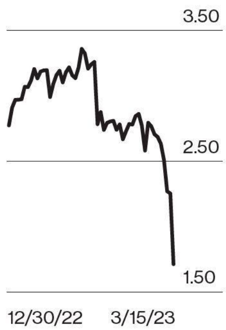
Anxiety in the Alps

▶ Credit Suisse shares plunged 24% on March 15 to their lowest level on record, after the bank's top shareholder, the Saudi National Bank, ruled out providing more assistance. Mounting concerns about financial companies are making it harder for the bank's leaders to convince investors they can pull off a turnaround. ▷ 22

▶ Late on the 15th, the Swiss National Bank said it would provide CS with liquidity if necessary. The central bank asserted that "the problems of certain banks in the USA do not pose a direct risk of contagion for the Swiss financial markets."

▶ For investors still on edge after the rapid-fire collapse of three regional US banks, the Swiss crisis provided a new reason to sell risky assets. By the market's close, benchmark indexes in Europe had sunk more than 3%; the S&P 500 registered a drop of about 0.7%.

Credit Suisse share price, in Swiss francs





● Chimwankhunda, Malawi, on March 14, following Cyclone Freddy's second strike. Already battling the worst cholera outbreak in its history, the country faces renewed risk of the waterborne disease after heavy rains damaged infrastructure.

War in Ukraine

▶ Russia seeks to retrieve an American surveillance drone that crashed into the Black Sea after being hit by a Russian fighter jet that was trying to bring it down on March 14. Defense Secretary Lloyd Austin insisted that the US would continue drone flights in international airspace. The episode—the first direct contact between Russian and US forces in the Ukraine conflict—led to fears of a broader escalation.

▶ As the deal with Russia that allows Ukraine to ship crops from its Black Sea ports nears its March 18 expiration, wheat futures are climbing. They rose 2%, to $6.98 a bushel, on March 14.

● Meta will lay off about

10k

employees and close 5,000 additional open roles in its second major round of job cuts in the past six months. Calling 2023 its "year of efficiency," Facebook's parent company is flattening the organization and canceling lower-priority projects, CEO Mark Zuckerberg said in a statement on March 14.

● ING will cut back on oil and gas loans.

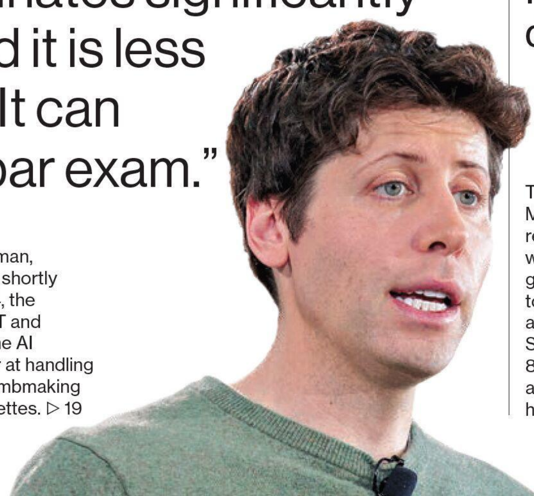
Looking to reduce its carbon footprint, the world's biggest lender to commodities traders said on March 14 that it will trim the volume of fossil fuel deals it finances by 19%. Commodity traders are highly reliant on banks to fund purchases and shipping of resources, so any restrictions have the potential to reshape the industry.

● The US Department of Transportation has begun accepting applications for

$2.5b

in grants to run public EV charging sites in urban, rural and tribal communities. The Biden administration plans to build 500,000 charging stations over the next five years.

● "It is more creative than previous models, it hallucinates significantly less, and it is less biased. It can pass a bar exam."



OpenAI CEO Sam Altman, tweeting on March 14, shortly after it unveiled GPT-4, the successor to ChatGPT and Dall-E. OpenAI says the AI software is now better at handling queries about, say, bombmaking or finding cheap cigarettes. ▷ 19

● Ohio sued Norfolk Southern over the East Palestine derailment.

The complaint, filed in federal court on March 14, seeks to hold the railroad responsible for its role in the accident, which spilled more than 1 million gallons of toxic chemicals in the small town. Attorney General Dave Yost said at a press conference that Norfolk Southern's accident rate has increased 80% over 10 years. The company, in a statement, said it's committed to helping the community. ▷ 64

● Only 40% of applicants for jobs paying $100,000 a year or more in February in the US were women. Yet they landed those jobs

53%

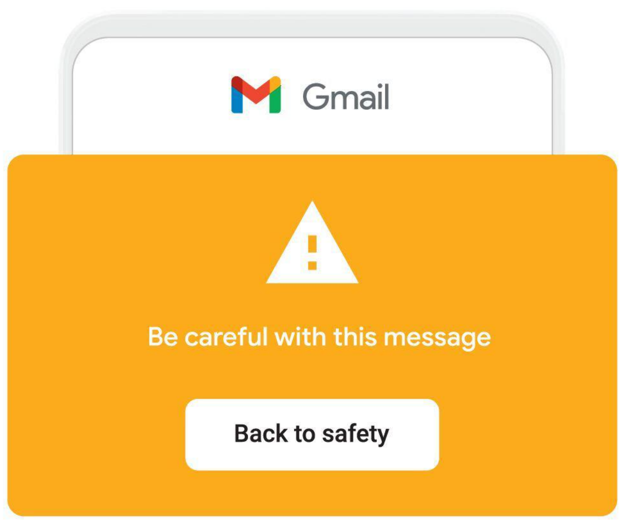
of the time, recruiter ICIMS reports. Women are less likely than men to go for positions they aren't totally qualified for, according to Harvard Business School researchers, and thus tend to be better candidates.

MALAWI: AMOS GUMULIRA/GETTY IMAGES. ALTMAN: JASON REDMON/GETTY IMAGES. DATA: COMPILED BY BLOOMBERG

Google

9 out of 10 cyberattacks begin with a phishing link

Gmail phishing protections were built to block more than 100 million attempts a day



Hackers use phishing emails to try and trick people into revealing personal information. Gmail features the most advanced phishing security available, because the best way to combat large-scale phishing operations are even larger-scale defenses.

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There's a Better Way For the Government To Bail Out Banks

The demise of Silicon Valley Bank has put the US government in an uncomfortable position, backstopping depositors like never before to prevent a broader and potentially devastating bank run. Given the risks, officials did the right thing. The hard part will be figuring out how to handle the consequences.

SVB's failure shouldn't have presented a systemic threat. The cash crunch that forced it to sell assets at a loss was specific to its tech-startup customers (page 22). The Federal Deposit Insurance Corp. was amply capable of handling its liquidation, which would entail reimbursing insured deposits and possibly imposing some losses on uninsured ones. The FDIC has successfully resolved hundreds of other banks this way.

But SVB went down differently. Its customers, goaded by industry influencers, proved surprisingly quick to pull out their deposits ($42 billion in one day). Other banks' customers started getting jittery, increasing the risk that imposing losses on some depositors might trigger a widespread exodus. So regulators expanded the backstop, pledging to make whole all SVB depositors. The Federal Reserve agreed to make emergency loans up to the full face value of certain high-quality bonds, to help other banks survive any surge in withdrawals.

This response appears to be working, but it also creates new problems. It's hard to see how regulators can now impose losses on depositors at any failed bank, meaning that taxpayers have effectively become the guarantors of all uninsured deposits—which amounted to more than $7 trillion last year. Limits on insurance provided at least some incentive for customers to be cautious and spread their money across different banks. Now they can put it all wherever they get the most attractive deal, risks be damned. Banks can create almost unlimited money in the form of deposits, secure in the knowledge that the government will back them.

What to do? As a start, officials will most likely strengthen existing regulations. If the Fed, for example, extends big-bank liquidity rules to certain midsize banks, it might better prepare them for sudden deposit outflows. Increasing requirements for loss-absorbing equity capital would make the whole system more resilient.

Yet such reforms won't address the underlying problem. If enough depositors try to withdraw their money at once, no reasonable amount of capital or liquidity will prevent failure: Banks can't sell their assets fast enough without incurring catastrophic losses. And if there's any chance that such a run will spread to the entire system, officials will feel obligated to intervene—something they've demonstrated time and again.

Solutions exist, but they may require a more radical rethink. One approach: Reduce the potential for bailouts by getting some control over the sheer volume of money-like instruments that might require backstopping. The Fed, for example, could limit financial institutions' deposits and other short-term obligations to the amount of assets they pledged in advance as collateral for emergency loans, minus "haircuts" to ensure the central bank wouldn't incur losses. This limit would enable the Fed to safely guarantee all short-term debt without relaxing lending standards again. By removing run risk, it would allow banks to fail with minimal drama or collateral damage. Even better, it would obviate the need for deposit insurance, liquidity requirements and reams of other regulations.

Regulators can't be expected to eliminate the risk of failures entirely. But they need to consider reforms—including ambitious ones—that would credibly limit the scope of future interventions. Doing more of the same and expecting a different result isn't a sane response. Ⓑ *For more commentary, go to bloomberg.com/opinion*

■ AGENDA

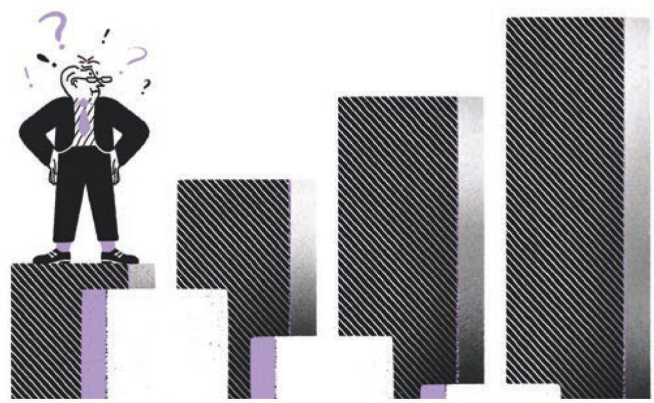


ILLUSTRATION BY ANDREA BOJKOVSKA

▶ What's It Gonna Be, Jay?

Although signals on inflation have been mixed this month, the US Federal Reserve is still expected to raise rates again on March 22. The turmoil unleashed by the SVB crisis has many calling on the Fed to pause increases.

▶ The Bank of England meets to set its interest rates on March 23. The BOE has said it thinks inflation in the UK has peaked, suggesting it may slow the pace of rate increases.

▶ The UK and Japan report inflation data on March 22 and 23, respectively. Germany follows on March 30. And the EU, France and Italy publish theirs on March 31.

▶ Foot Locker and Nike report earnings on March 20 and 21; Chewy and Petco, on the 22nd; General Mills and Accenture, on the 23rd; Lululemon and Walgreens, on the 28th.

▶ March 31 features two Guggenheim openings: In New York, see Sarah Sze's dramatic site-specific installations; in Bilbao, take in the lush oil portraits of Lynette Yiadom-Boakye.

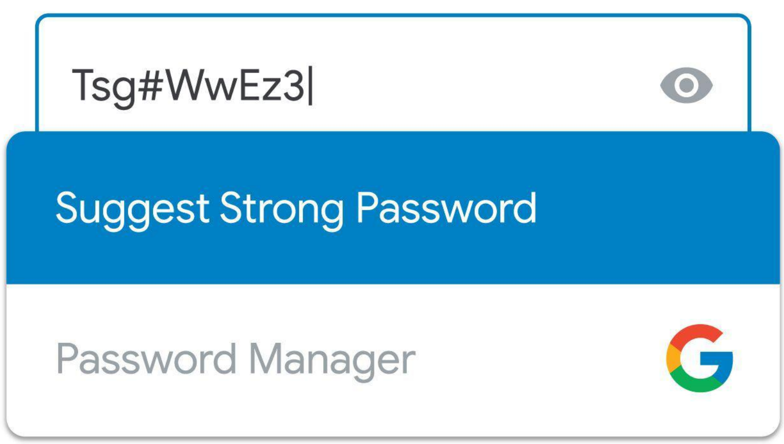
▶ Hans Christian Andersen's birthday, April 2, is International Children's Book Day. Pick up a copy of *Olivia*, *Goodnight Moon* or *The Lorax*, and share it with your favorite tyke.

▶ Egyptians are going into the holy month of Ramadan, which starts on March 23, with some angst. A recent hike in fuel prices, coupled with high inflation, may weigh on family gatherings.

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Under Pressure

● History shows that when the Federal Reserve is raising rates, an unexpected shock can trigger a recession

● By Christopher Condon

Take a tour through US recessions of the past 50 years, and it's hard not to wonder whether Silicon Valley Bank will turn out to be the banana peel that upends an already unsteady economy.

When the Federal Reserve is raising interest rates, as it is now, recession is always a risk. And slumps tend to come suddenly after an unexpected shock deals a blow to confidence during a particularly vulnerable time.

"The combination of the Federal Reserve trying to slow things down to deal with inflation, financial conditions tightening and then—under the stress—you're going to see some breakage," says Peter Hooper, global head of economic research for Deutsche Bank AG.

Sometimes an external blow tips over a slowing economy, as in 1990 when oil prices spiked in reaction to Iraq's invasion of Kuwait, spoiling Fed Chair Alan Greenspan's hopes for a soft landing. More often, higher rates reveal hidden weaknesses, especially after a period of easy money or an influx of financial sector deregulation. Sectors that are overleveraged, investment funds with heavily concentrated exposure or banks with too much risk get exposed as the proverbial naked swimmers when the tide goes out.

In the early 1980s, Fed Chair Paul Volcker was waging his now-legendary fight against inflation. It triggered the collapse of Continental Illinois National Bank & Trust Co., then the seventh-largest commercial bank in the US.

Here are two more instances in which a series of Fed rate hikes exposed cracks that widened into a full-fledged downturn: The bursting of the so-called dot-com bubble in 2001 set off a recession; seven years later, an overleveraged housing sector brought down Bear Stearns and Lehman Brothers. In each case, a rapid series of events turned wariness over slowing growth into more visceral fear of what might happen next. Investors and lenders across the economy withdrew to safety, consumers retrenched, and employers began cutting workers loose.

"There is a fragility in the US macro economy that is not well understood but is plainly evident to the naked eye when growth slows to a walking speed," says David Wilcox, director of US economic research at Bloomberg Economics and a former division director at the Fed.

What's easy to see, Wilcox says, is that when confidence takes a sudden downturn, unemployment tends to ramp up sharply. The jobless rate shot to 10% in October 2009, from only 4.4% in mid-2007, because of fallout from the global financial crisis. Even the comparably mild recession of 2001 pushed unemployment to 5.7%, from 3.9%, within that calendar year; it continued rising until it peaked at 6.3% in mid-2003.

Many are asking now whether the spectacular collapse of Silicon Valley Bank and two other lenders will tip the US into recession. Economists so far are responding with a cautious "probably not."

SVB, Signature Bank and Silvergate Bank, the three lenders that shut down in early March, were unusual in two related ways. Both their borrowers and depositors were heavily concentrated among technology companies. That sector expanded too rapidly during the pandemic and is already shedding workers, even as the rest of the economy continues to add jobs.

Additionally, the three banks had made significant purchases of long-term US Treasuries, a bet that surely looked safe after the onset of Covid-19, when the Fed lowered interest rates to almost zero and signaled it would keep them there for an extended period. But a sudden surge in inflation in 2021 and into 2022 forced the Fed into a series of aggressive rate hikes that slashed the market value of those long-term Treasuries.

A key question immediately following the takeover of SVB by federal regulators was whether other lenders were similarly exposed. Regulators decided on March 12 that the answer to that question was probably "yes" and acted preemptively to ward off additional bank runs by guaranteeing all uninsured deposits at SVB and Signature. The Fed also created an emergency lending facility and eased terms at its discount window, allowing banks to more easily access cash.

It also helps that regulations enacted after the global financial crisis imposed much stricter capital and liquidity requirements on the largest banks operating in the US, greatly reducing the likelihood that they would wobble under stress.

"This is not the Lehman moment," says Neil Shearing, group chief economist at Capital Economics. "If this crisis were to end tomorrow, it is not going to be the event that causes the US economy to fall into a recession." Still, midsize banks aren't the only potential flashpoint. While not directly linked to US bank troubles, tetchy investors punished Credit Suisse Group AG's stock and bonds on March 15 after its top shareholder rejected the idea of further cash injections into the long-suffering Swiss financial giant.

Julia Coronado, president of MacroPolicy Perspectives LLC and a former Fed economist, is most worried about how pension funds, insurers and other institutional investors in recent years have funneled an increasing share of their cash into private equity funds, which have in turn invested heavily in the tech sector. "It's clearly an area where we don't know what's under the hood," she says. "I'm not feeling confident, and we're already dancing at the edge of financial stability."

Given the strong message sent by regulators, Wilcox says he's "reasonably confident" that investors and bank depositors will be reassured, the risk of contagion will be stamped out and this event won't prove to be one that triggers recession. "But," he adds, "it's hard to be totally certain of anything once a crack has appeared in the facade." Ⓑ

Hollywood Braces For a Strike

Without a deal by May 1, production of dozens of shows and movies may come to a standstill

On March 5, one week before the Academy Awards, Hollywood's screenwriting elite gathered at the Fairmont Century Plaza Hotel near Beverly Hills for their own love fest: the 75th Writers Guild Awards. In what augured an enviable sweep at the Oscars, the absurdist, genre-bending film *Everything Everywhere All at Once* from Daniel Kwan and Daniel Scheinert won the night's most coveted honor, best original screenplay.

Accepting that accolade, Kwan doled out thanks to an unusual recipient: his "picket captain," a colleague overseeing preparations for a potential work stoppage by the writers behind virtually every American show, movie and streaming series. "If you don't have a captain yet, go find one," Kwan told the crowd in the hotel's ballroom. "Let's give 'em hell."

The Writers Guild of America, a union of 25,000 film, television and radio writers, will start negotiations on March 20 with the Alliance of Motion Picture and Television Producers, which represents studios. The WGA's key complaint is that the rise of streaming services has led to a drastic reduction in the earnings of the folks who craft the scripts the studios need. Before streaming, writers could count on hefty residual payments—recurring royalties—from films and TV episodes rerunning on cable. A scribe's work is now judged by metrics such as the number of clicks a film or show gets, or whether it breaks into the top 10, and streamers in many cases have gotten away with paying writers a flat fee with minimal bonuses for superior performance—typically far less than what they stand to receive from a big theatrical hit.

In August the WGA won an arbitration case against Netflix Inc. after arguing that the writers of *Bird Box*, one of the platform's most popular films, were shortchanged because Netflix hadn't paid the standard rate for the right to distribute the movie, as it would have had to do if the film had been given a significant theatrical run rather than going straight



● 1981



● 1988

Edited by David Rocks and Rebecca Penty

to streaming. An additional 139 titles on Netflix were lumped into the ruling, which stipulated that more than 200 WGA writers working on those projects would share $42 million in unpaid residuals from the company; the WGA is seeking a further $13.5 million in interest for late payment. A month later, in a separate case, the WGA won an arbitration ruling against Amazon.com Inc. that will pay 37 writers a combined $4 million in residuals and interest for films distributed on its Prime platform.

On March 7 the Writers Guild said 98.4% of its members approved a list of goals for the talks that included an increase in minimum compensation, higher residual payments and a boost in contributions from studios to pension and health plans. Although neither side will give details of what the WGA is seeking, the recent arbitration rulings suggest meeting its demands would cost studios tens of millions of dollars. "We're not looking for a fight," Meredith Stiehm, head of the WGA's West Coast division, said in a speech at the guild's awards ceremony. "But we're not going to get rolled either."

The WGA's three-year contract with studios will expire on May 1, and if the two sides don't come to an agreement before then, Hollywood risks shutting down. Although most scripts are written long before cameras roll, dialogue is frequently revised on set, and scenes are reshot (and reshot and reshot) until the director and studio bosses are happy with the outcome. That can't happen without writers. Because the schedules of actors, directors and production staff are fixed months and even years in advance, a strike would threaten many projects with delays or cancellation.

The last time the WGA walked out, in 2007, was the fifth work stoppage in the union's 90-year history. The writers put down their pens for 100 days, costing the Los Angeles economy some $2.5 billion, the Milken Institute and the Los Angeles County Economic Development Corp. estimate. Dozens of popular shows, including *The Big Bang Theory*, *Desperate Housewives*, *Family Guy*, *The Office* and *The Simpsons*, had to run seasons with fewer episodes. *Battlestar Galactica* and *Entourage* seasons were postponed, and *Big Shots* and *Bionic Woman* were canceled. The standoff led to a surge in reality-TV shows, which don't need screenplays.

The main point of contention in 2007 was residuals from DVDs (remember those?) as well as compensation for selling scripts to video websites the guild referred to as "emerging technologies." This time around, those once-emergent technologies are the industry's new giants, and the screenwriters want a fair share of their growing success.

Aiming to keep filming during the potential stoppage, studio executives have been hoarding scripts and accelerating shooting schedules, according to people familiar with the matter who aren't authorized to discuss contingency plans. But those rough drafts may still need revision and finessing—and no one will be on call to assist.

Not everyone is taking that approach: Michael De Luca, co-chair of the Warner Bros. movie studio, said on March 3 at the Texas Film Awards that the strike "is talked about like 'Gee, we need to stockpile material.'" For Warner, he said, it's business as usual. "We don't agree on rushing things to prepare for a strike and ending up with a subpar ▶

11





● 2007

FROM LEFT TO RIGHT: JOAN ADLEN/ALAMY; BETTMANN/GETTY IMAGES; DAVID MCNEW/GETTY IMAGES

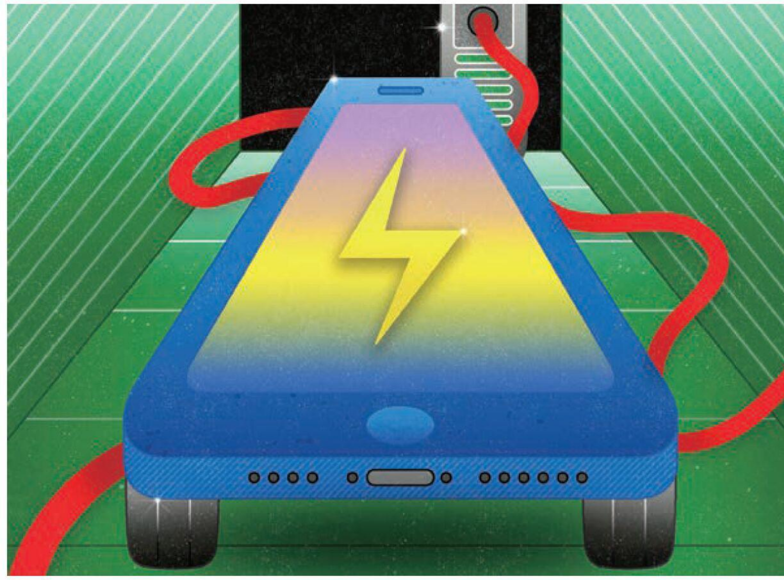
◀ screenplay or subpar movies," De Luca said.

The WGA's talks will set the stage for another influential group, the Directors Guild of America, whose contract expires on June 30. The DGA, which represents 18,000 people, from stage managers on low-budget movies to superstar auteurs, has historically been less hot-tempered than the WGA, walking out only once since it was founded in 1936. The directors are seeking higher pay to reflect surges in the cost of living, better protocols for safety on set, higher contributions to pension and health plans, and an increase in streaming residuals. "This promises to be an extremely challenging negotiating environment," DGA negotiations chair Jon Avnet and national director Russell Hollander said in a letter to members. "If necessary, we are prepared for a fight." —*Thomas Buckley*

THE BOTTOM LINE The WGA says the rise of streaming means writers make less money, because they no longer get hefty residual payments from films and TV episodes rerunning on cable.

Foxconn Takes the Slow Lane in Ohio

● The iPhone maker's EV dreams are running into the reality of recalls and fledgling partners



Over the past decade, Foxconn Technology Group has followed increasingly complex plans from Apple Inc. to turn silicon, glass, plastic, copper and other materials into hundreds of millions of iPhones. And Apple is just one of the Taiwanese company's dozens of A-list customers; Google, Microsoft, Sony and many others have hired it to make phones, computers, tablets, game consoles, servers and more. So it's not much of a stretch to think Foxconn might do the same for cars.

So far, though, cars are turning out to be a tougher slog than electronic gadgets.

Last year, Foxconn paid $230 million for a former General Motors Co. factory in Lordstown, Ohio, aiming to make it the center of a US automanufacturing push. As part of the deal, the previous owner of the 6.2 million-square-foot plant, four-year-old Lordstown Motors Corp., hired Foxconn to build its Endurance pickup truck, and the Taiwanese company took a stake in the startup.

Foxconn has made grand predictions for its auto business, saying it will generate $33 billion in annual revenue by 2025. And it's announced partnerships in Taiwan, Thailand and Saudi Arabia. Although its electric vehicle components business is on track to grow fivefold to more than $3 billion this year, at this point the only vehicles Foxconn has made are a handful of prototypes, a few dozen electric buses and about 40 pickups for Lordstown.

In January, Lordstown asked Foxconn to suspend production because the cost of making the trucks exceeded the targeted sale price of $65,000. A few weeks later it became clear that the Endurance suffered from, well, a lack of endurance. At least one owner reported that the truck had lost power while driving in cold weather, prompting the company in February to issue a recall. Then on March 6, Lordstown said that if it can't team up with an experienced automaker, it would be forced to discontinue the pickup, its only model.

The announcement raises questions about Foxconn's nascent EV business. Lordstown was effectively saying Foxconn couldn't keep its flagship vehicle in production despite its vast resources, its expertise in turning ideas into products and decades of wrangling global supply chains to get those products out the factory door on time and at cost. "Why does Lordstown need another strategic partner to bring the ailing project to fruition?" asks Danni Hewson, an analyst at brokerage AJ Bell. "Is it because Foxconn's simply not ready to become an EV powerhouse without a bit of outside help?"

Foxconn says that it remains committed to its EV plans and that its experience in electronics sets the stage for success in cars. But while Lordstown has pledged to continue developing new vehicles with the Taiwanese company, the track records of other potential customers suggest Foxconn remains far from realizing its e-car dreams. "You

▼ Foxconn's entry into EVs

▷ May 2022
Completes deal with Lordstown Motors to acquire Ohio factory for $230m

▷ October 2022
Unveils two EVs to be built in Taiwan, Thailand and the US

▷ November 2022
Teams up with Saudi wealth fund to build EVs

▷ November 2022
Agrees to invest as much as $170 million in Lordstown Motors and takes two board seats

▷ January 2023
Hires former Nissan exec Jun Seki as chief strategy officer for EVs

ILLUSTRATION BY MINET KIM. NAGLE: JOSE CENDON/BLOOMBERG

need people skilled in volume production," says Ron Harbour, an independent industry manufacturing consultant. "It can be done, but I haven't seen that demonstrated by startup electric car companies. I'd call it a long shot."

Closest to production is Monarch Tractor, which last August hired Foxconn to manufacture autonomous electric farm vehicles. Monarch makes them in limited numbers at a facility in Livermore, California, and the companies plan to shift production to Lordstown by the end of March.

Less certain is Fisker Inc. Foxconn is in talks with the Los Angeles company to build a sub-$30,000 EV known as the Pear. Fisker says it fully expects Foxconn to manufacture the car, but the two companies are still negotiating the cost, according to people familiar with the matter. And in September, Foxconn signed an initial agreement with IndiEV, another startup in California. At the time, Foxconn called the prospect of building the company's prototypes a "success story." But at the end of September, IndiEV had less than $220,000 in the bank. The company now says that it aims to go public in a reverse merger, but that if it can't complete that process by July, it risks going out of business.

Those collaborations could still succeed, and Foxconn may find other companies that want it to build their vehicles. But a site in Mount Pleasant, Wisconsin, illustrates what may lie ahead. That's where, in June 2018, Foxconn executives and then-President Donald Trump held a groundbreaking ceremony for what was supposed to become a $10 billion, 20 million-square-foot LCD-panel factory that Trump heralded as "the eighth wonder of the world."

Over the next two years, Foxconn repeatedly scaled back its ambitions. After originally promising to create 13,000 jobs at the site, Foxconn renegotiated its contract with the state in 2021. The company today says it's invested more than $1 billion and hired about 1,000 people. Those people are making electronics such as computer servers, and Foxconn plans to add components for battery packs at the Wisconsin site to deepen ties to both existing automakers and startups. Still, Foxconn's record in Wisconsin is a red flag, says Michael Shields, a researcher at Policy Matters Ohio, a nonprofit that evaluates the economic impact of big industrial investments in the state. "I do think there is cause for concern," he says, "about what is going to happen in Lordstown." *—Sean O'Kane, with Debby Wu and David Welch*

THE BOTTOM LINE Foxconn has predicted $33 billion in annual revenue by 2025 for its auto business, but so far it's only made some prototypes, a few dozen electric buses and about 40 pickups.

Glencore Stays the Course With Coal

● The commodities giant's CEO says the fossil fuel is still necessary, even as he pursues minerals needed for the energy transition

With the world burning more coal as Russia's war in Ukraine plunged global energy markets into chaos, commodities giant Glencore Plc pulled in a record $34 billion in profit last year. Gary Nagle, its boss, makes no apologies for more than half of that windfall coming from coal. At the same time, he also wants investors to focus on the minerals needed for a battery-powered future: copper, cobalt and nickel. "We must transition," Nagle says. "It's the ▶

▼ Glencore's CEO Nagle at its head office



◀ responsibility of those involved in the business."

Under Nagle, who took over in 2021, the shift away from coal won't be fast. When the world committed to the Paris climate targets and investors started urging corporate leaders to embrace environmental causes, Glencore proposed a gradual exit from coal mining, while its chief rivals—BHP Group Ltd. and Anglo-American Plc—promised a quick departure. "Coal is a necessary fuel for today," says Nagle in a boardroom at Glencore's headquarters near the lakeside Swiss town of Zug. "It provides stable base load power, particularly for the developing world."

Coal has traditionally vied with copper as Glencore's biggest driver of earnings. Last year high coal prices meant it contributed $17.9 billion, compared with $5.7 billion for copper. Glencore's strategy to stick with coal while also pursuing the commodities of the future has drawn criticism, and as the impacts of climate change mount, its coal profits will continue to be condemned by environmentalists and investors alike. "It's a tricky situation," says RBC Capital Markets mining analyst Tyler Broda. "There's going to be a sort of persistent pressure on the company, whether to divest or just continue with the strategy."

Nagle, 48, a two-decade veteran of Glencore's coal business, follows in the footsteps of some of the most successful commodity traders, including his predecessor, Ivan Glasenberg, who also ran the coal business before becoming chief executive officer in 2002. After the company went public in 2011—making Glasenberg and his partners billionaires—Glencore bought miner Xstrata Plc and entered the industry's top tier.

When Nagle took over, Glencore was mired in corruption probes that shadowed Glasenberg's final years at the company. Led by the US Department of Justice, investigations focused on bribery allegations in multiple countries, including Venezuela and Nigeria. Last year the company pleaded guilty and set aside $1.5 billion to cover the fines. "It's behind the company, but not forgotten," Nagle says, referring to lessons learned from the saga and new policies Glencore has enacted to avoid running into trouble again.

Glencore, which faces similar probes in Switzerland and the Netherlands, will spend the next five years on probation in the US and has legal monitors appointed to ensure the company's practices are appropriate. Glencore has all but eliminated the use of outside agents to broker deals and overhauled its compliance and training procedures. And given the problems caused by its notorious "cash desk," where traders could ask for wads of $100 bills, the company has "eliminated cash," Nagle says. "Even if you want to go on a trip and you need cash to pay taxis and you need $200, you just can't get it. You just use your own money."

Nagle says he expects profits to keep rolling in as there will be little respite from the high energy prices that have helped drive inflation. "The world remains in an energy crisis," he says.

To facilitate the energy transition, the biggest miners are looking to copper, an essential component in decarbonizing technologies such as electric motors and grid connections for offshore wind farms. Glencore predicts copper production will need to almost triple by 2040 if the world is to hit targets for net-zero carbon emissions. That explosion in demand will push copper prices up by some 15%, to more than $10,000 a ton, and they'll stay there, Nagle says.

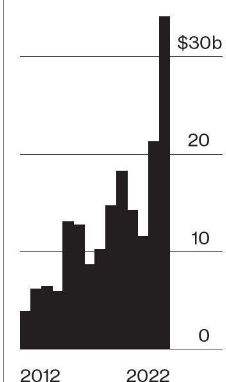
Glencore, he says, can double its copper output to 2 million tons a year by expanding mines and building new ones. That's somewhat of a departure from Glencore's longstanding policy to acquire or expand existing sites instead of pursuing new projects, under the belief that the latter was too costly and added supplies that could lower prices.

Some analysts caution that Glencore's fat profit margins are at risk as its mining business faces rising costs from inflation and operational challenges that have curbed production, including flooding and geotechnical issues. "They could be better at running those operations," says George Cheveley, a portfolio manager at Ninety One UK Ltd. in London who owns Glencore stock. Nagle has done a good job taking over from Glasenberg, a big personality, and transitioning Glencore away from being run like a "quasi private family company," Cheveley says. Still, Glencore needs to do better at balancing how much attention it gives its trading business, which is based on short-term market conditions, and the long-term business of running mines as efficiently as possible, he says. "I sometimes feel they haven't got that quite right, the balance between operations and trading."

Glencore is slowly evolving under Nagle's leadership. There's a Seattle-style coffee shop at the Zug offices where employees can work while sipping a latte, and a gym that's used throughout normal working hours—activities that would have been frowned upon when Glasenberg was at the helm. "I do run things differently to Ivan," Nagle says. "I am my own individual, my own person." —*Thomas Biesheuvel and Will Kennedy*

THE BOTTOM LINE While Nagle is doing a few things differently than his predecessor, his core strategy and approach remain consistent with that of the man who hired him two decades ago.

▼ Glencore pre-adjustment earnings*



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Free Online Tax Returns, Brought to You by the IRS

A government competitor to Intuit's TurboTax may be more likely now than it's ever been

In almost every wealthy country, governments offer a free way for citizens to calculate what they owe in taxes. A notable exception is the US, where online tax prep is a big business dominated by TurboTax owner Intuit Inc., which has maintained its position despite an onslaught of lawsuits and public criticism. But the threat of a publicly run competitor, which has been bubbling under the surface since the internet's early days, may be more serious than ever.

The Inflation Reduction Act, which President Joe Biden signed last August, includes nearly $80 billion to modernize the Internal Revenue Service and for the first time requires that the agency study whether it can build a tool that might replace products such as TurboTax for millions of Americans. An academic consultant enlisted for the study, due in May, has in the past advised that the IRS adopt "the most expansive version of a direct e-file program."

Wall Street analysts still think the chances of the government building such a filing system are so remote that they don't even factor it into their models. But dissatisfaction among regulators is keeping the pressure on. Officials have accused TurboTax of tricking low-income customers into paying for services that it describes as free, while journalists and even stand-up comedians have detailed the ways Intuit has fought to stop government initiatives.

A free filing program able to handle a significant portion of the 166 million tax returns filed annually is a big undertaking, and there would be consequences if the IRS messed it up. "If the software rolls out and it's glitchy, then it casts doubt and raises trust issues," says Sarah Kreps, a professor who heads ▶

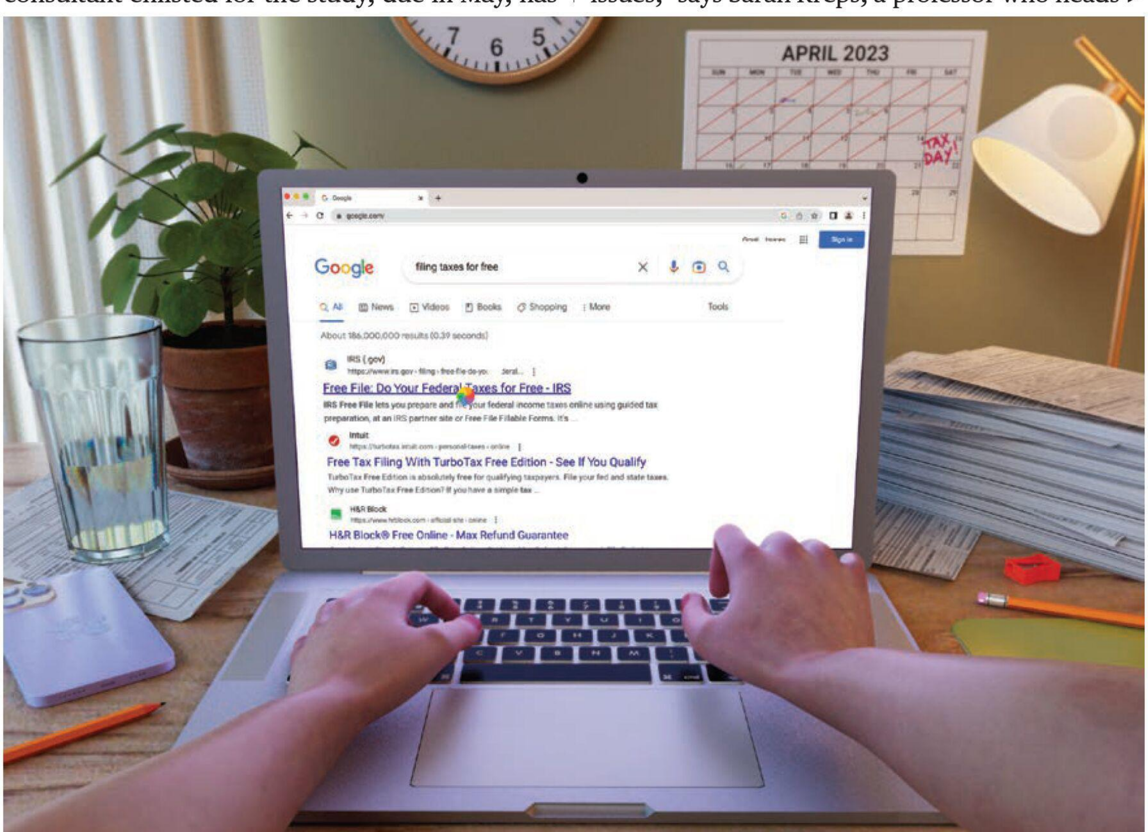


ILLUSTRATION BY JACKIE CARLISE

Edited by Joshua Brustein

◀ Cornell University's Tech Policy Institute. "There's a real downside risk." She says struggles like the 2013 launch of healthcare.gov, the Obamacare enrollment site, undermined public faith in government-run technology.

Intuit says the US tax code is too complicated for the long-underfunded IRS to build a true competitor. "Frankly, I think the government has been back and forth for the last 25 years thinking about exactly this study," said Chief Executive Officer Sasan Goodarzi in an August interview with Bloomberg Television. He said the new IRS funding was a "nonevent."

At the same time, the company has been warning investors since at least 1998 about the threat of a public filing system. Last year, as the specifics of the new IRS funding were being developed, Intuit spent more on federal lobbying than in any other year in its 40-year history. A person familiar with its Washington operation, who asked not to be identified because they weren't authorized to speak publicly, says its lobbyists have continued to work to convince lawmakers that expanding government-facilitated tax filing is a bad idea.

A well-designed public system would "likely reduce the risk of error and audit for most taxpayers," Ariel Jurow Kleiman of Loyola Marymount University—who's advising the IRS—and Jonathan Choi of the University of Minnesota wrote in a paper published in February. (Some House Republicans have questioned the objectivity of Jurow Kleiman's analysis, suggesting in a March 6 letter to the IRS that "the outcome of the study has been predetermined.")

The $33 billion over a decade that the Inflation Reduction Act sets aside to modernize service, operations and systems could spur the IRS into action. Code for America, a civic tech nonprofit that previously collaborated with federal agencies on benefits-access programs, released a mock-up of an e-file interface, envisioning a government service landing page where users could also register to vote or file for benefits such as food stamps. "The technology exists to do all this stuff—it's just the IRS has never had the funding," says David Newville, a former Treasury Department adviser who now leads Code for America's tax practice.

For two decades, the IRS has agreed not to compete against tax prep companies in exchange for their providing free online filing for Americans with income below a certain level, amounting to about 70% of the public, through a program known as IRS Free File. But only about 4% of eligible taxpayers participated for filing year 2020, according to a Government Accountability Office report, and its two anchor companies—Intuit and H&R Block Inc., which handled the majority of traffic—have left the program. Rather than renew the current agreement when it expires in October 2023, the GAO encouraged the IRS to evaluate new options, including government-run software.

Intuit's critics accuse the company of trying to upsell people who qualify for free filing and say this was a key reason its agreement with the IRS failed. As part of a 2022 settlement with state regulators over allegations that it pushed paid services on free customers, the company agreed to five years of government monitoring, to pay $144 million in fines and to be more clear in its web design and advertisements about which services are free. TurboTax still offers paid upgrades for services such as audit defense and live assistance. It also offers services through Credit Karma, a former competitor known for consumer loans, which Intuit bought in 2020. The Federal Trade Commission is seeking further restrictions on business practices in a case going to trial in March. Intuit denies wrongdoing and says the cases are redundant.

Of the 42 million people who used TurboTax online in 2022, about 13 million had straightforward returns and paid nothing, according to Intuit. Among people it charges for services are those who receive unemployment income, carry student loans, own homes or hold cryptocurrency. Paying customers laid out an average of $109 each, says Intuit. There's no guarantee those people would start using a free government option if one existed, given consumer inertia and Intuit's heavy marketing budget. The company spent about $320 million last year alone, according to advertising research platform Vivvix.

In Intuit's view, it's a conflict of interest for the IRS to provide automatic tax-bill calculation, as it has a disincentive to help taxpayers pay less in taxes. But Intuit's upselling reveals the tension inherent in any for-profit entity's practice of providing a service it doesn't charge for directly: It wouldn't be doing so if it didn't see some other way to recoup the costs.

This is exactly why the government should step in, says Nina Olson, who founded the nonprofit Center for Taxpayer Rights after serving for 18 years as the IRS's national taxpayer advocate, an independent watchdog position. "It's a fundamental taxpayer right to have the government provide free electronic filing of taxpayer forms," she says. "Taxpayers shouldn't have to pay for the privilege of filing their taxes." —*Brody Ford and Ben Steverman*

THE BOTTOM LINE Critics complain Intuit steers customers into pricey, unnecessary services, but the company says the government is too conflicted to develop a free alternative.

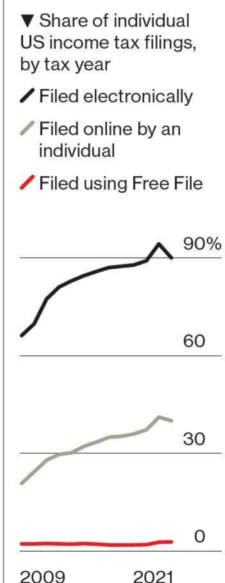


ILLUSTRATION BY ARNE BELLSTORF. DATA: IRS

How Do Policymakers Solve a Problem Like ChatGPT?

● The rise of chatbots is an added challenge to officials trying to develop rules for AI

Calls for governments to regulate artificial intelligence far predate OpenAI's release of ChatGPT in late 2022. But officials haven't come up with an approach to deal with AI's potential to enable mass surveillance, exacerbate long-standing inequities or put humans in physical danger. With those challenges looming, the sudden emergence of so-called generative AI–systems such as chatbots that create content on their own–is presenting a host of new ones.

"We need to regulate this, we need laws," says Janet Haven, executive director of Data & Society, a nonprofit research organization in New York. "The idea that tech companies get to build whatever they want and release it into the world and society scrambles to adjust and make way for that thing is backwards."

The most developed proposal today for regulating AI comes from the European Union, which first issued its Artificial Intelligence Act in 2021. The legislation, whose final form is still being debated, would put aggressive safeguards in place when the technology is being used for "high risk" cases, including employment decisions or in some law enforcement operations, while leaving more room for experimentation with lower-risk applications. Some of the lawmakers behind the act want to designate ChatGPT as high risk, an idea others object to. As it's written, the bill focuses on how technologies are used rather than on the specific technologies themselves.

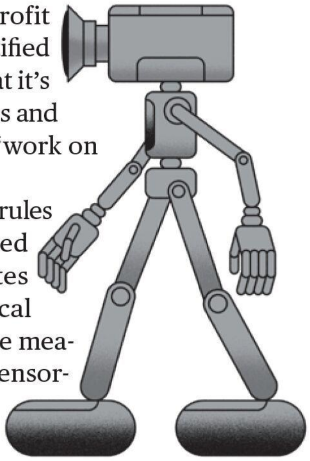
In the US, local, state and federal officials have all begun to take some steps toward developing rules. The Biden administration last fall presented its blueprint for an "AI Bill of Rights," which addresses issues such as discrimination, privacy and the ability for users to opt out of automated systems. But the guidelines are voluntary, and some experts say generative AI has already raised issues–including the potential for mass-produced disinformation–that the blueprint doesn't address. There's growing concern that chatbots will make it harder for people to trust anything they encounter online. "This is part of the trajectory towards a lack of care for the truth," says Will McNeill, a professor at the University of Southampton in the UK who specializes in AI ethics.

A few public agencies in the US are trying to limit how generative AI tools are used before they take hold: The New York City Department of Education prohibits ChatGPT on its devices and networks. Some US financial institutions have also banned the tool. For AI more broadly, companies have been rapidly adopting new guidelines in recent years with "no substantial increases" in risk mitigation, according to a 2022 survey by McKinsey & Co.

Without clear policies, the main thing holding back AI seems to be the limits the companies building the tech place on themselves. "For me, the thing that will raise alarm bells is if organizations are driving towards commercializing without equally talking about how they are ensuring it's being done in a responsible way," says Steven Mills, chief AI ethics officer at Boston Consulting Group Inc. "We're still not sure yet what these technologies can do."

Companies such as Google, Microsoft and OpenAI that are working on generative AI have been vocal about how seriously they take the ethical concerns about their work. But tech leaders have also cautioned against overly stringent regulations, with US-based companies warning Western governments that an overreaction will give China, which is aggressively pursuing AI, a geopolitical advantage. Former Google Chief Executive Officer Eric Schmidt, now chair of the nonprofit Special Competitive Studies Project, testified at a congressional hearing on March 8 that it's important AI tools reflect American values and that the government should primarily "work on the edges where you have misuse."

For its part, China is already planning rules to govern generative AI and has stopped companies from using apps or websites that route to ChatGPT, according to local news reports. Some experts believe these measures are an attempt to implement a censorship regime around the tools or to lay ground rules for Chinese companies ▶



◀ such as Baidu Inc. But technologists may be pushing ahead too rapidly for officials to keep up. On March 14, OpenAI released a new version of the technology that powers ChatGPT, describing it as more accurate, creative and collaborative. *—Lucy Papachristou and Jillian Deutsch*

THE BOTTOM LINE Generative AI products could aggravate unsolved problems of the internet like the spread of disinformation, as other AI tools also raise questions around surveillance and bias.

Drugs in Space

● A startup thinks a lab in low-Earth orbit is the key to pharmaceutical breakthroughs

One of the less intuitive benefits of the new Space Age could be breakthroughs in drug development. With the pressures of gravity stripped away, atoms and molecules behave differently, and researchers have long discussed making medicines and chemicals in low-Earth orbit.

Large pharmaceutical companies have been carrying out a limited number of these experiments for years. Merck & Co. used the International Space Station to refine the recipe for its cancer treatment Keytruda—its bestselling product, with more than $20 billion in annual sales. But the cost of working on the ISS is enormous, and its astronauts are often reluctant to make time in their schedule to handle potentially dangerous chemicals in such a confined space.

The emergence of the commercial space industry has made it easier and cheaper to reach orbit, and a startup called Varda Space Industries, based near Los Angeles, is betting that the time for orbital laboratories has finally arrived. It's developed an automated drug lab that fits into a space capsule. About 3 feet across at its widest point, the capsule looks like a miniaturized version of the cone-shaped craft that bring humans back from the ISS.

Varda plans to use robots to mix, heat and cool chemical compounds suitable for drug development, which will then be converted into a solid form and returned to Earth, where the company hopes they'll serve as the basis for making industrial-size batches of new pharma products in traditional factories. Among the products it's likely to pursue are novel cancer therapies, as well as treatments for diabetes and chronic pain. "We have built a unique way to manipulate chemical systems," says Will Bruey, Varda's co-founder and chief executive officer. "And the most expensive chemical systems on Earth are drugs. We knew that making them in space was the killer app of microgravity."

Varda's first capsule will fly aboard a Space Exploration Technologies Corp. rocket in June, alongside dozens of satellites from other startups willing to pay about $275,000 for every 110 pounds of material they want flown to space. The goal of Varda's first flight is to make sure that its robotic machinery and chemistry technology work as expected, and that the capsule can survive the reentry into Earth's atmosphere and land via parachute in the Utah desert. The company has already purchased future flights for more of its capsules,







▼ Varda's space capsule; co-founders Asparouhov and Bruey

PHOTOGRAPHS BY SPENCER LOWELL FOR BLOOMBERG BUSINESSWEEK (3)



▲ Varda engineers assemble a reentry vehicle

where it hopes to begin formulating compounds.

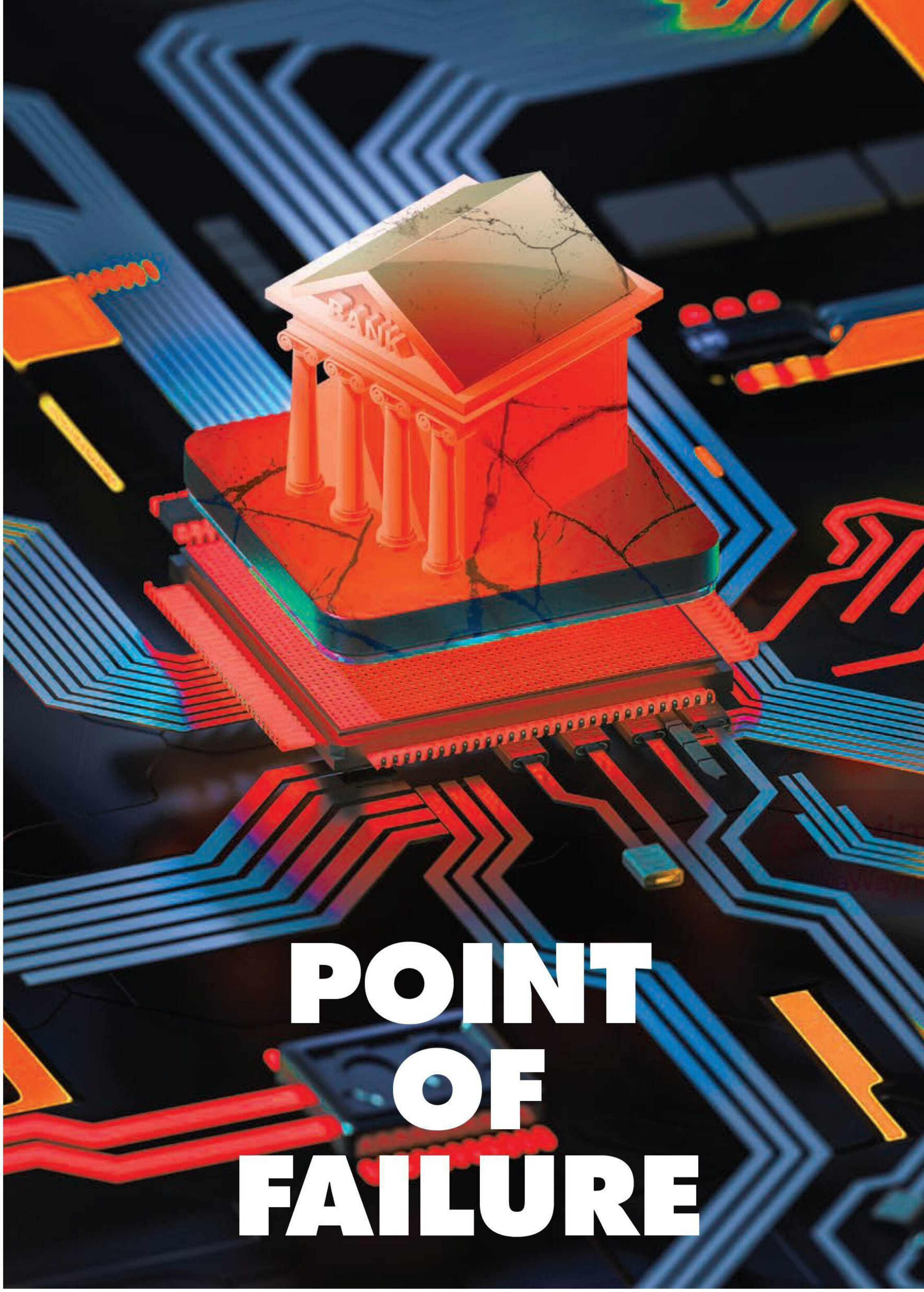
Varda has raised $53 million from investors including Caffeinated Capital, Fifty Years Industries, Founders Fund, Khosla Ventures and Lux Capital. It also has a $60 million contract with the US Air Force and NASA to study its capsules' reentry into Earth's atmosphere, which they're expected to do at more than 25 times the speed of sound. So-called hypersonic flight is an area of strategic competition between the US and China, and Varda's vehicles are attractive for experiments, since—unlike many capsules returning to Earth—they aren't carrying humans.

The government work is tangential to Varda's mission, though. The real opportunity lies in breakthroughs with drugs whose development has stalled on Earth. Numerous promising drugs can crystallize when stored, rendering them unusable on humans. Infamously, this issue forced a stop to the sales of the pill form of the HIV drug Ritonavir in the late 1990s, after years of research and hundreds of millions of dollars in investment. Varda's executives think the company can use orbital labs to kick-start development of new versions of many older drugs in safe pill and injectable forms. "We are able to do world-class chemistry," says Delian Asparouhov, the co-founder and president of Varda, who's also a principal at Founders Fund. "We are not just aerospace jackwagons."

Assuming it succeeds in demonstrating in its first launch that its basic methods can work, Varda will still have to confront doubts that many useful drugs can be made in space and questions about whether drugs originating in orbit can be mass-produced in factories on Earth. "The potential is huge, and I kind of look at it as this promising emerald in the sky," says Arthur Boni, a professor emeritus at Carnegie Mellon University who's done both aerospace and biopharma research. "Still, it's just a niche at the moment, and pharma is a really challenging industry."

The future Varda is pushing toward involves dozens or even hundreds of facilities orbiting Earth, eventually making not only drugs but also other products that would benefit from microgravity. One day the company might even have craft big enough to send humans to space to help with production, says Bruey: "The goal is to create a routine manufacturing operation in orbit." —*Ashlee Vance*

THE BOTTOM LINE Chemicals act in weird ways in the microgravity environment of low-Earth orbit, presenting opportunities to revive development of some stalled drugs.



POINT OF FAILURE

● Silicon Valley Bank's collapse exposed a weakness in tech—and in the broader economy

For 40 years, Silicon Valley Bank enmeshed itself in the venture capital community, often with the comfortable touches of a beloved hometown bank. Sequoia Capital partner Michael Moritz compared the bank to a "cherished local market" where the people behind the counter knew every customer's name and sold them their cut of meat with a smile. SVB and its employees could be counted on to "tend community gardens, supply food banks, or provide companionship to the elderly," he wrote March 12 in an op-ed article in the *Financial Times*. Until the events of the previous week, he said, Sequoia always recommended that new startups open an account with SVB.

In cities such as London, Boston, New York and Palo Alto, California, SVB pulled out the checkbook to sponsor technology conferences, networking dinners and happy hours, where stressed-out founders

Edited by
Pat Regnier and
Paula Dwyer

PHOTO ILLUSTRATION BY 731; PHOTOS: GETTY IMAGES (2). STILL: EVERETT COLLECTION. LEHMAN: ANDREW WINNING/ALAMY

clinked glasses with peers and investors. One startup executive says he always told job-hunting friends to get lunch with a local SVB rep—they'd know everyone in the industry who was hiring.

SVB was a regional bank for a specific industry. That industry just happened to be one of the most powerful economic engines in the world, which made SVB the 16th-largest bank in the US, with assets of about $200 billion. It also made its collapse on March 10 the biggest US bank failure since 2008.

The day before, news that the bank had lost money on some of its investments sent the stock of its parent company, SVB Financial Group, into freefall. Depositors frantically tried to pull out $42 billion in a single day—an astonishingly fast bank run. So many people in the startup world did business with SVB, it was as if they had stumbled upon an inferno in their own living room.

It only got worse after the bank went into Federal Deposit Insurance Corp. receivership. Sure, the FDIC would cover up to $250,000 of deposits against losses, but many businesses that banked at SVB had much, much more in their accounts. Founders were terrified their money had been vaporized. One chief executive whose business had more than $40 million at SVB rushed all weekend to line up a handful of loans to cover $1.2 million needed in days for a 250-employee payroll. Normally, a startup in a pinch might ask for a short-term loan from its investors, but many VC firms also banked with SVB, and their money was frozen, too.

Why did seemingly all of Silicon Valley keep their millions with the same bank? One reason is SVB catered to customers other banks didn't really understand. Startups with no revenue but promising growth needed loans and corporate credit cards; entrepreneurs with valuable equity but a low salary needed mortgages. Traditional banks ignored them, but SVB treated them to lunch. Liz Giorgi, a startup founder, tweeted that 27 banks turned her down for a line of credit before SVB welcomed her. When the payments company Stripe launched a program in 2016 to help overseas startup founders incorporate in the US, each freshly hatched business was set up with an SVB US account, because the bank was willing to work with people who didn't have Social Security numbers. SVB frequently lent a startup money on friendly terms, with a key requirement: The startup had to park almost all its cash with SVB.

Silicon Valley lionizes innovators and disrupters, but it's also prone to herding. When a particular niche—artificial intelligence, for example—gets hot, founders rush in, and investors scramble to fund them. With SVB, the tech industry showed the same groupthink about where to bank. ▶

ALL YOUR BURNING BANK QUESTIONS

HOW DOES A $200 BILLION BANK SUDDENLY RUN OUT OF MONEY?


A classic run, on the Bailey Building & Loan

This was an old-fashioned bank run, like in *It's a Wonderful Life* or—our favorite example—*Mary Poppins.* Banks live or die on confidence. They never have all of their depositors' cash on hand. Instead, much of that money is invested in loans to homeowners and companies and in bonds. That's fine as long as (1) those investments don't tank and (2) depositors don't start worrying about the health of the bank and scrambling to get their money out before the tills are empty. On Thursday, March 9, depositors got very nervous about Silicon Valley Bank's investment portfolio and suddenly asked for $42 billion back. The next morning the Federal Deposit Insurance Corp. closed the Santa Clara, California-based bank to stop the bleeding. By Sunday night, federal regulators said they'd guarantee all its deposits, including those over the usual $250,000 limit on FDIC protection.

SO WHAT SCARED EVERYONE ABOUT SILICON VALLEY BANK?

The catalyst seems to have been SVB's attempt to raise money—about $2.25 billion in new equity. That told people something might be very wrong—why else would SVB be trying to do that? The bank also said it was selling some of its assets to "strengthen our financial position" and "enhance profitability." Those words were in bold type at the top of the announcement, but the ones everyone noticed were further down: "earnings loss of approximately $1.8 billion in connection with the sale." SVB had taken a bath on bonds it owned. The bank's stock dropped an attention-getting 60% on March 9. Prominent venture capital firms in Silicon Valley began advising companies they invested in to get their money out.

IS THIS LIKE IN 2008, WHEN BANKS HELD A LOT OF TOXIC MORTGAGES?

Weirdly, no. SVB didn't invest in dodgy debt. It held billions of dollars in solid mortgage-backed securities, and also held Treasuries, which are considered among the safest assets in the world. Safe, in this case, means that as long the bank held those bonds until maturity, it would get its money back with interest. In the meantime, though, the value of those bonds rises and falls as interest rates rise and fall. Which means that while the bank wasn't taking a lot of credit risk, its interest-rate risk was very high.



The 2008 bank crisis was a different breed

WHAT'S INTEREST-RATE RISK?

This may sound abstract compared with, say, the risks of not getting your money back when the real estate market crashes, as it did in 2008. But ask anyone who's ever traded a bond—admittedly, not

◀ Some may not have had a choice. "Frankly, we did it because there weren't others knocking down our doors," says Giorgi. Most of her peers in her startup accelerator cohort banked with SVB, she says: "This is a 40-year-old bank with a credible reputation across the startup industry." Individually, that didn't seem risky. Collectively, it balanced an entire industry on a single point of potential failure.

SVB was born in 1983, which turned out to be the perfect moment to start a new financial institution at the heart of a new economy. Interest rates and inflation would roll mostly downhill for the next 39 years, making it easier to raise money as computers relentlessly got faster, cheaper and more connected. Cash poured into the region's venture capital firms and startups, and they in turn shoveled it through SVB's teller windows, real and virtual.

In Silicon Valley, the saying goes: Startups die of indigestion, not starvation. That is, too much money can be as bad as not enough. It wasn't that the bank lent money to businesses that couldn't pay it back. Instead, stuffed with deposits, SVB bought bonds. These bonds were safe from a credit perspective—the issuers weren't going to go broke—but they had long maturities and low yields. That's a toxic combination when interest rates start rising. And suddenly last year, rates started going up a lot.

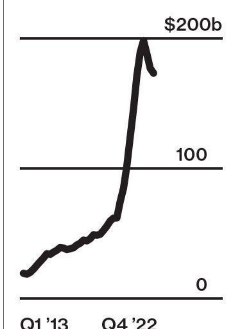
SVB, perhaps lulled by the long stretch of rock-bottom rates, failed to grasp how drastically conditions would shift. It was an error shared by many internet companies, which saw revenue soar in the pandemic's first year and hired small armies of workers, unable to foresee that they would have to lay off more than 100,000 of them two years later. (On March 14, Facebook parent Meta Platforms Inc. announced plans to eliminate 15,000 positions, its second major round of cuts in the past six months.)

When venture capital investors started warning the companies they funded that SVB might go under, the rush to pull deposits happened all at once—assisted by digital tools. It created a dark version of what the business school crowd calls "first-mover advantage." Quaid Walker, a founder who managed to wire funds out of the bank on March 9, before it closed, says the ones who moved fastest—sparing themselves angst—were those who spent more time on Twitter, where good information is often mixed with paranoia that amplifies Silicon Valley pile-ons.

The immediate SVB fiasco has calmed; depositors were assured at the end of a scary weekend that they would get their money back. Still, the panic served as a painful reminder that it's hard for people to change their assumptions as quickly as the world can change. It isn't just techies. Supposedly gimlet-eyed stock analysts in New York missed this one, too. But in the tech industry, the long, good run fueled stratospheric growth, and the culture saw no problem with collecting much of that growth in one institution. So when something big had to break, it happened here first. *—Ellen Huet, with Kelsey Butler and Amelia Pollard*

THE BOTTOM LINE Silicon Valley Bank rode a period of phenomenal growth for both finance and technology, but it wasn't able to adjust when interest rates rose abruptly.

▼ SVB total deposits



THIS STRESS WAS NOT A TEST

● Regulators' response to the bank's fall was haunted by memories of 2008

It was approaching midnight in Washington and 9 p.m. in Santa Clara, California. The news was bad—and getting worse. Everyone from President Joe Biden on down was getting a crash course on Silicon Valley Bank, the once-obscure bank that has now cast a big shadow over the financial markets.

At the White House and the US Department of the Treasury next door, bleary-eyed officials were racing to prevent the trouble at SVB from exploding into a full-blown banking crisis. A block west at the Federal Deposit Insurance Corp., regulators argued about what to do. At the Gridiron Club dinner, Washington's annual see-and-be-seen white-tie journalism roast, a marquee guest, Federal Reserve Chair Jerome Powell, was conspicuously absent.

That Saturday, March 11, the fate of techdom's preeminent bank—and with it, some feared, the future of the global economy—was being gamed out in Washington. Over the next 24 hours, almost everyone in the financial industry would be on tenterhooks as federal officials raced to complete a rescue before Asian markets opened Sunday night.

The implications of the SVB collapse are still coming into focus. Questions keep piling up. How

POWELL: BLOOMBERG. MONEY: SHUTTERSTOCK. DATA: COMPILED BY BLOOMBERG

could SVB, a favorite of venture capitalists and unicorn startups, succumb to a run in the smartphone age? Why hadn't banking regulators seen this coming?

Federal authorities want answers, too. The Department of Justice and the Securities and Exchange Commission have opened investigations into the collapse. One potential focus: sales of SVB stock in the weeks before the failure by Greg Becker, chief executive officer of the bank's parent company. Biden, meanwhile, has pledged a push to tighten banking rules, which the Fed is already considering doing for midsize institutions like SVB.

This much is sure: All these years later, Washington is still haunted by the Wall Street fiascoes that triggered the Great Recession. The colossal bank bailouts of that era saved the economy, but they also rankled ordinary Americans, gave birth to the Tea Party movement on the right and Occupy Wall Street on the left, and transformed US politics. Backlash to the bailouts died down, but the resentment never really went away. It may have ultimately helped Donald Trump win the White House in 2016, some political scientists have said.

Which is probably why President Biden has been reluctant to even say the word "bailout." He vowed on March 13 that "no losses will be borne by the taxpayers." For the time being, Biden is right. This doesn't look like a Lehman moment that could upend the whole economy. But it does look like a Bear Stearns one—a smaller debacle pointing to more pain to come, in this case because of the sharp rise in interest rates that triggered SVB's problems and is still roiling the financial system.

Federal authorities have taken the extraordinary step of guaranteeing all deposits at SVB and opening a broader emergency lending program. By midweek after the failure, the fix was holding. If it doesn't, the next move might have to be a suspension of the $250,000 limit on federal deposit insurance.

Policymakers, venture capitalists, banking executives and tech entrepreneurs are all struggling to figure out the next steps. SVB's fall has changed the conversation about banking and the regulators who oversee it. Suddenly, everyone is thinking about other risks that might be lurking. On March 14, Moody's Investors Service cut its outlook for the entire US banking system, to negative from stable, citing the run on deposits at SVB. Two other lenders have gone bust, too: crypto players Silvergate Capital Corp. and Signature Bank.

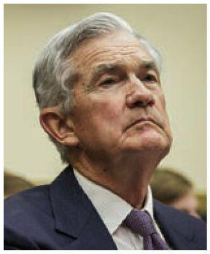
The death spiral at SVB began with credit ratings. In early March, Moody's informed the bank it was considering a multilevel downgrade that ▶

something you probably do much on your Robinhood app—and they'll tell you that interest-rate hikes can be real killers. Investors who buy bonds expect to get a yield that matches whatever the current rates happen to be. Say newly issued Treasuries are paying 4% a year. If you own one that's paying 2% and want to sell it, you'll have to cut your price far enough that the buyer ends up earning 4% on what they pay for it. So whenever rates rise, bond values fall. That may not matter to ordinary investors who aren't buying and selling bonds, but it can be a real headache for banks and other institutions.

WHY DID SILICON VALLEY BANK HAVE SO MUCH OF IT?

It started with a smashing success: Three years ago, customer deposits at the bank stood at $62 billion. Not bad. But by the end of last year, deposits had swelled to about $175 billion, the result of a pandemic-fueled tech industry surge. Because SVB was the institution of choice for the most prominent venture firms in the Bay Area, the startups they backed also used SVB. Venture capital-backed companies had raised a record $330 billion in 2021—almost double the amount raised in 2020. Money flew through the air amid successful initial public offerings, mergers and capital infusions for startups, and found its way to the bank.

The bank had to put the money somewhere. But the influx coincided with a period of rock-bottom interest rates engineered by the Federal Reserve to support the economy through the Covid-19 emergency. To get a little more return, SVB could buy longer-maturity bonds. Generally speaking, bonds with longer maturities are more sensitive to losing value when rates go up. The bank's bet proved to be a fateful error: Russia invaded Ukraine, energy prices soared, supply chains froze and inflation surged. The Fed did an about-face and abruptly began raising its benchmark short-term interest rate, pushing it toward 5% from almost zero a year earlier.



Fed Chair Jerome Powell likes to give out rate rises these days

The true worth of SVB's investment portfolio was obscured thanks to accounting rules, but if it had been priced at current market values, it would have shown losses greater than $15 billion at the end of 2022. SVB was hardly the only bank seeing such paper losses on bond investments, but it had another problem: its depositors.

COULDN'T DEPOSITORS JUST WAIT IT OUT?

SVB turned out to have a lot of what's known in banking circles as "hot money"—deposits that can suddenly swell a bank's assets once invested but can also disappear in a flash. As the tech industry hit a downturn, many of the bank's clients were already burning through cash and drawing down their SVB accounts. Also, the businesses SVB specialized in serving kept a lot more money in the bank than ordinary customers—often well above the usual limit on FDIC protection. (At the end of last year, more than 90% of the banks' domestic deposits were uninsured.) Many depended on those deposits as working capital or to make payroll. So they were a lot more likely to move their money at the first whiff of trouble—and a relatively small number of people were in a position to pull millions of dollars at once.



Hot money

◀ would have pushed it to the brink of junk-bond status. In response, Goldman Sachs Group Inc., hired by SVB to help it raise fresh capital, jumped into action. It offloaded a chunk of SVB's investment portfolio at a $1.8 billion loss. On Wednesday, March 8, Goldman pitched a plan to investors to help plug that hole, and then some, by raising $2.25 billion in capital from General Atlantic and other investors. It didn't work.

"The Catch-22 of the situation is that, by announcing the need to raise capital, they in essence accelerated customer concern, resulting in the liquidity stress that ultimately caused their collapse," says Olivier Sarkozy, managing partner at Further Global, a private equity firm. "It would have been far better to announce the $2.25 billion they were seeking had been secured."

In the bankers' view, they were racing the clock to defuse the Moody's threat. That didn't leave them enough time to canvass the market, line up the funding and present a neat deal. Then CEO Becker held what turned out to be a disastrous call with VCs and limited partners. "Stay calm," he said. It was too late. Bankers tapping away at their phones watched, aghast, as social media lit up with reports of a bank run.

By 3 p.m. Thursday, March 9, the news out of Santa Clara had reached the White House. Such high-profile venture firms as Union Square Ventures and the Peter Thiel-backed Founders Fund had already been encouraging the companies they invested in to yank their deposits, almost all of which were uninsured because they exceeded the $250,000 federal guarantee. Founders Fund had drained its own accounts from the bank by midday.

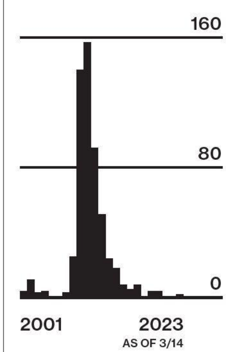
The message was echoed by other VC titans. Bookface, an internal social network for founders of companies backed by the startup accelerator Y Combinator, was abuzz, as was a messenger thread of more than 1,000 founders from Andreessen Horowitz, with many encouraging one another to pull cash from the bank. By day's end, depositors had tried to withdraw $42 billion.

Silicon Valley bigs—many with a libertarian, get-government-off-our-backs bent—quickly looked to Washington. They implored the administration to step in and rescue depositors, or risk having banks topple like dominoes. On Friday morning, March 10, the new White House Chief of Staff Jeff Zients and Lael Brainard, the former Fed vice chair who'd just become director of Biden's National Economic Council, went to the Oval Office to brief the president. They told him there was potential for the bank to be shut down—as it was later that day, even before the close of financial markets—and that there was a possibility of contagion, according to a source familiar with the discussion.

From dawn to midnight the next day, Zients, Brainard and other aides working in the White House's West Wing developed a set of options. By Saturday afternoon, it was clear that regulators would probably need to take action to prevent contagion. When Treasury Secretary Janet Yellen and top aides briefed Biden on the options, he was adamant: The federal government stood ready to protect depositors, small businesses and employees. Executives and investors could take their lumps. He didn't want taxpayers to be on the hook, and any deal had to include firing management.

In the Bay Area on March 9, Iba Masood was struggling to make sense of it all. Masood, the co-founder and CEO of a tech startup called Tara.AI, had raised $14 million from investors. And she'd parked every penny of the company's money at SVB. Masood began firing off emails and texts—hundreds and hundreds of them, until her carpal tunnel flared up. Tara.AI, she told her investors, was facing a perilous squeeze. She hopped in her C300 Mercedes-Benz and raced through a driving

▼ Failed US banks



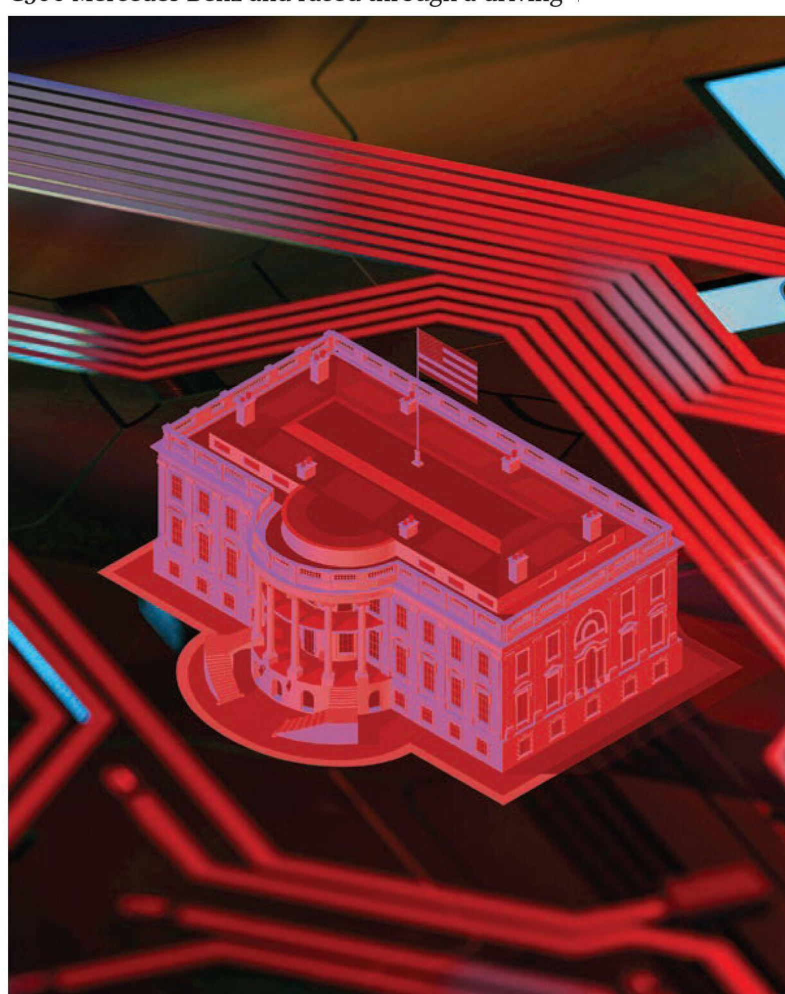


PHOTO ILLUSTRATION BY 731; PHOTOS: GETTY IMAGES (1); SHUTTERSTOCK (1). BIRD: SHUTTERSTOCK. YELLEN: BLOOMBERG. FAILED BANK CHART EXCLUDES SILVERGATE, WHICH WASN'T TAKEN OVER BY REGULATORS. DATA: FEDERAL DEPOSIT INSURANCE CORP.

rainstorm to a Bank of America branch. Drenched, she hastily opened a corporate account. She felt good, she said, confident. She'd wake up the next morning and have the money in the new account.

But there was no next morning for SVB. It was too late. The money was frozen.

Trae Stephens, a partner at Founders Fund, said the firm had had a long, fruitful relationship with SVB. But that long, fruitful relationship wasn't going to help Thiel's firm honor its fiduciary duty to look out for its backers and limited partners. And it wasn't going to help all those startups make payroll.

"The most inconvenient thing about the situation last week was actually the name of the bank. It got instantly politicized," Stephens said in a March 14 interview on Bloomberg Television. To him, the idea that Washington had bailed out rich VCs and techies is hogwash. "The government did what it needed to protect and shore up these smaller regional banks, to ensure there weren't any further runs. It seems like they acted quickly—and did the right thing." —*Sridhar Natarajan, Saleha Mohsin, Jordan Fabian, Josh Wingrove, Edward Ludlow, Priya Anand, Lizette Chapman, Steven T. Dennis, Hannah Levitt, Gillian Tan and Matthew Monks*

THE BOTTOM LINE Over a tense weekend in Washington, officials scrambled to keep the fallout from SVB's collapse from spreading without creating a political burden for themselves.

ARROGANCE, INCOMPETENCE OR BOTH?

● SVB's fall is a story of misunderstood risk—and the rise of a new kind of financial power

Banks aren't supposed to fail. If they did so with any regularity, one of the most critical cogs in our economic machinery—the transformation of deposits (a liability) into loans (an asset)—would just seize up and stop functioning.

We rely on the magic of credit creation for everything from leasing cars to buying homes to funding city budgets. That's why, when a bank fails, it's so essential to figure out what happened and ensure the same mistakes won't be made again. ▶

SVB "should have paid attention to the basics of banking: that similar depositors will walk in similar ways all at the same time," says Daniel Cohen, former chairman of Bancorp Bank. "Bankers always overestimate the loyalty of their customers."

The result was what former FDIC Chairman William Isaac guesses is one of the quickest bank runs in US history. And unlike in *Mary Poppins*, where Michael Banks screamed "Give me back my money!" and panic spread among people who happened to be around the bank, this one went viral in a closely connected startup community in constant touch on group chats and social media.

SO IS THIS SOMETHING ELSE I CAN BLAME ON SOCIAL MEDIA?



Twitter got very vocal about bank risk

Technology may have sped things up, but it seems clear SVB had some underlying risk management issues. More worrying is what occurred over the weekend after the bank closed, when no one was sure what would happen to large depositors. Some widely followed voices in tech and finance took to Twitter to warn—sometimes in shouty ALLCAPS—that banks around the country could fail by Monday morning if the federal government didn't step in. Others begged for a little chill. "Some of the calculations on Twitter exaggerate the risks facing the banking system," tweeted Mohamed El-Erian, chief economic adviser at Allianz and a *Bloomberg Opinion* columnist. "The risk is that such calculations fuel undue anxiety, amplifying systemic instability." As the chatter grew louder, it became clear that bank regulators would have even less time than they thought to calm things down.

WAS THERE REALLY A RISK OF CONTAGION?

It's hard to say just how much of a risk SVB posed. But remember that banks are all about confidence. The danger was that other companies that kept their deposits at similar regional banks—even far away from Silicon Valley—might start to worry that their deposits weren't safe.

WHAT DID REGULATORS DO?

The Fed, US Department of the Treasury and FDIC said all depositors at SVB and Signature Bank in New York—a bank with deep ties to the real estate development industry that regulators closed on March 12—would get all their money back. The Fed also created an emergency lending program under which banks holding money-losing assets can pledge them as collateral and borrow against them at face value for one year. Those terms are extraordinarily generous, showing that the government urgently wanted to restore faith in the banking system.



Treasury Secretary Janet Yellen was an active participant

IS MY MONEY SAFE?

As long as you have less than $250,000 in a single account at an FDIC-insured bank, it was always safe. And it still is. If you or your business have more than $250,000 in a single account, it's technically not guaranteed at the moment (except at SVB and Signature). But based on what just happened, it sure doesn't look like the government is going to let any bank customers lose money.

The trickier question is what the economic aftershocks will be. SVB was an important institution at the heart of the technology industry,

◀ In the case of Silicon Valley Bank, the lender that failed so spectacularly, the specific cause is easy to see in hindsight. As deposits poured in during the pandemic, the bank bought tens of billions of dollars in bonds just before the Federal Reserve began raising rates to fight inflation. As rates shot up, the value of those holdings suffered huge losses. SVB was in deep trouble.

When, on March 9, the bank tried to instill confidence by raising money, it brought about the opposite. Depositors fled en masse—a classic bank run. The next day, regulators had to seize SVB and take emergency measures to keep the sudden collapse from metastasizing into a broader financial disaster.

Because few things are so basic to banking as managing the interest-rate sensitivity, or duration, of assets and liabilities, the best explanations for what happened at SVB might be arrogance or incompetence.

But there's a more general cause behind this bank failure, one with potentially far-reaching implications: SVB collapsed in part because it became a creature of the sweeping financialization of the US economy—the exodus of money from public markets in the 2010s, the ascendancy of so-called alternative assets and the concentration of power in the hands of a new generation of tycoons.

As its name suggests, Silicon Valley Bank was built to serve the needs of the technology and life-sciences industries born in Northern California. And 20 years ago, that's largely what it did, providing loans, revolving lines of credit and services such as cash management to startups in communications, software, biotechnology and medical devices.

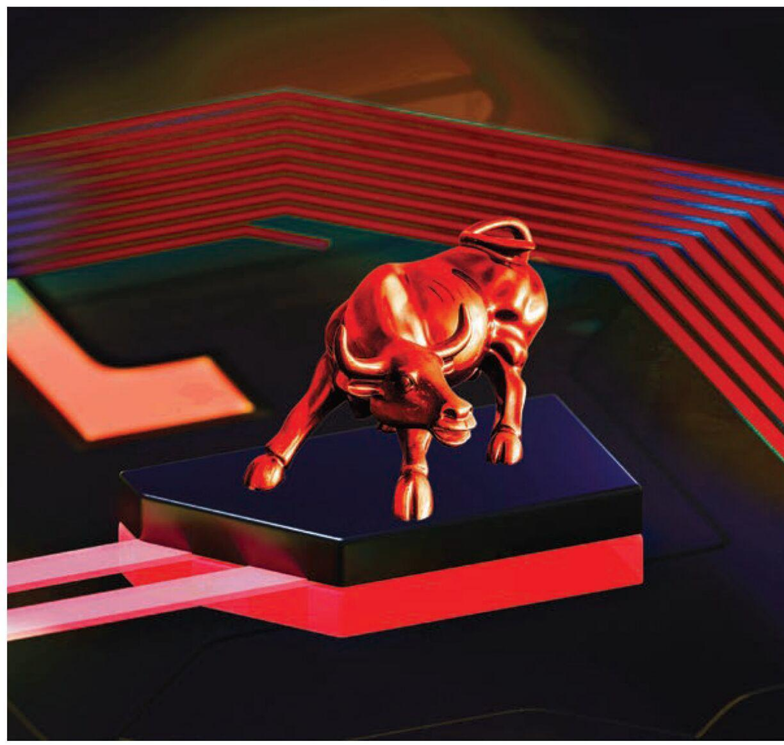
SVB's revenue followed the ebbs and flows of corporate activity in the region. It boomed in the late 1990s, survived the dot-com bust, then prospered as tech regained its mojo in the mid-2000s.

For bankers who needed new business, there was no network better than the venture capital community. As the lifeblood of early-stage tech and biotech, VC firms controlled access to thousands of corporate treasurers.

Greg Becker joined SVB in 1993 as one of those bankers serving VCs. By 2011, when he became its chief executive officer, a transformation was underway. Venture capital and private equity firms (VC's latter-stage cousin in the world of alternative investments) were displacing tech companies as the bank's top clients. It's no wonder. Total fundraising for investments in nonpublic markets rose to $1.18 trillion in 2021, from $96 billion in 2003.

There were so many ways for a lender such as SVB to serve this ever-growing pool of money. A PE firm might need financing for a leveraged buyout, a currency hedge to lock in the price of a deal or a place to deposit the proceeds from an asset sale. VC firms were continually in need of bankers to manage the initial public offerings of their portfolio companies or to offload them to acquirers.

An executive, flush with the profits from a banner fund, might want a private banker for tax planning or to arrange the mortgage on a multimillion-dollar home. "The more that we can provide one-stop shopping across all the needs of our clients, and not just doing an OK job but doing an exceptional job, why would you go any other place?" Becker said on a conference call in January 2021.



By the time SVB failed, the transformation was complete. Almost 70% of its $76 billion in outstanding loans was entirely or partly dependent on private equity or venture capital for repayment.

The borrowers didn't need the money, of course, at least not in the traditional sense. But SVB was willing to make loans against the investment commitments of limited partners such as pension plans and endowments. PE and VC firms use these subscription lines of credit to burnish returns by smoothing out lumpy results in the early years of a fund. Those same two groups returned the favor by parking deposits at SVB—some $36 billion as of Dec. 31. It seemed like a virtuous circle.

We now know the symbiosis amounted to something else entirely—an existential risk Becker and his management team either didn't see or didn't understand. Bank regulators missed it, too. The concentration of assets and liabilities in one clubby

PHOTO ILLUSTRATION BY 731; PHOTOS: GETTY IMAGES (1); SHUTTERSTOCK (1). BIDEN: BLOOMBERG. ILLUSTRATION BY LUCA SCHENARDI

group of financiers that for so long worked to SVB's advantage proved to be its undoing.

As stocks tanked in 2022, VC investing slowed. Startups, many of them burning through cash, had to withdraw money from their bank accounts, and deposits at SVB dropped for the first time in almost four years.

When analysts peppered him with questions in July, Becker brushed off concerns. "There is so much money out there," he said. "And when there's so many good companies out there, that money will continue to be deployed from my standpoint at a healthy clip."

Except deposits kept falling. And on Feb. 24, SVB disclosed that the unrecognized losses on its pandemic-era bond investments were almost enough to wipe out its balance-sheet equity. The end followed swiftly.

In the US, a typical bank of SVB's size has millions of depositors small enough to fall under the $250,000 cap for federal insurance. (Fifth Third Bank of Cincinnati has 6.17 million such accounts, for example.) Because they're so numerous and because they're protected, it takes a lot to trigger the kind of panic that overwhelms a major financial institution.

At SVB, only 6% of deposits were insured. Because its clients were big, sophisticated and mostly unprotected, many behaved differently. Firms that the bank cultivated for decades thought nothing of drawing down their balances in a moment. Founders Fund, Coatue Management, Union Square Ventures and Founder Collective were among those advising the companies in their portfolios to pull out.

As California's bank regulator said in its March 10 order of seizure, "the precipitous deposit withdrawal has caused the bank to be incapable of paying its obligations as they come due, and the bank is now insolvent."

The managers of private capital in all its forms—venture capital, growth equity, private equity, private debt, infrastructure and natural resources—now oversee a record $8.9 trillion in assets by one estimate. Their influence over the economy has never been greater, and it can work in unpredictable and disquieting ways.

As the cliché goes, it's the desperate borrower, pockets empty, rent unpaid, who begs a banker for mercy. In the final hours at SVB, though, it was Becker pleading with his depositors to "stay calm." *—Erik Schatzker*

THE BOTTOM LINE SVB became increasingly reliant on venture capital and private equity firms, which made it more vulnerable to a sudden stampede of withdrawals than many other banks.

which was already suffering, with many companies in Silicon Valley laying off thousands of employees. For obvious reasons, regional bank stocks are hurting: As of March 15, an index fund tracking them was down more than 20% since March 8. The broader US stock market was only down less than 3%. Investors are weighing concerns about the financial sector against the possibility that the Fed will slow down or even reverse its interest-rate hikes.

THIS WAS ANOTHER BAILOUT, RIGHT?

President Joe Biden took pains on March 13 to say the regulators' moves meant "no losses will be borne by the taxpayers." He was anticipating a debate over whether the US should have rescued wealthy venture capitalists and tech companies, who certainly knew beforehand that their money wasn't guaranteed. By the simplest definition of a bailout, they got one. Although taxpayers aren't directly on the hook for it, the money to cover depositors will come from a guarantee fund that FDIC-insured banks pay into. If banks' fees rise, however, customers nationwide could see lower interest on savings and higher fees on overdrafts. And in the unlikely event that the insurance fund runs out, Treasury can supplement it with $25 billion in taxpayer money. Regulators took pains to point out that SVB shareholders were wiped out and senior managers had been fired. In 2008, the government's moves to protect the financial system saved a lot of big banks and their shareholders, as well as their executives.



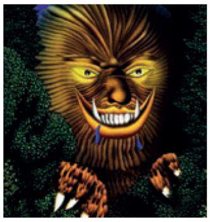
Biden went on TV and played the calm card

WHO DROPPED THE BALL?

It's now clear that the bank didn't recognize its exposure to interest rates and simultaneously had a depositor base overly concentrated in a single industry. But bank regulators apparently didn't see those balance sheet time bombs, either. The Fed is starting an internal probe into how SVB was supervised. Greg Becker, SVB's chief executive officer, was a director of the Federal Reserve Bank of San Francisco, one the bank's main watchdogs, until the day it failed.

A deregulation measure signed into law by President Donald Trump in 2018 repealed the requirement that banks with $50 billion to $250 billion in assets face annual stress tests, among other rules designed to maintain the soundness of large banks. (Although recent tests have not focused on interest-rate risk.) SVB and other regional banks' lobbyists and executives had pushed Congress to lighten up oversight, arguing that they weren't systematically risky the way JPMorgan Chase & Co. or Goldman Sachs were. That turned out not to be true.

ANYTHING ELSE I NEED TO WORRY ABOUT?



Yes, there's still a monster out there

On March 15, the bad vibes in the US banking industry were rubbing off on the already troubled Swiss banking giant Credit Suisse. Its stock declined 24%. And there's one more monster risk out there: Sometime later this year, unless Congress raises a self-imposed ceiling on the amount of debt the government is allowed to take on, Treasury might not be able to pay the nation's bills. *—Paula Dwyer and Pat Regnier, with Brian Chappatta, Jenny Surane, Katanga Johnson, Tracy Alloway and Amelia Pollard*



Brazil Yanks the Welcome Mat for Oil In

● Foreign oil majors have filed an injunction to halt a new tax on crude exports

When Shell Plc's new chief executive officer, Wael Sawan, landed in Brazil last month on his first official trip abroad, the reception was warm. He received assurances that the country's new leftist leadership would respect the status quo in the oil industry, people familiar with the visit said, and he left confident that business would keep chugging along.

The camaraderie was short-lived. Two weeks later, Brazil surprised drillers by enacting a temporary tax on oil exports. In response, Shell and a group of foreign oil companies filed an injunction against the levy, risking a public legal battle with President Luiz Inácio Lula da Silva's administration. The clash could damage Brazil's hard-won reputation as Latin America's rare petroleum-rich nation that welcomes foreign oil producers and respects its contracts with them.

Should this credibility erode, it might well chill $20 billion a year in oil industry investments in Brazil at a time when there are already serious questions about where the world will find its next font of fossil fuels.

The 9.2% export tax, announced on the last day of February, was the first of two moves by the administration that sent tremors through the international oil industry. Lula's government also halted about $2 billion in planned sales of oil field rights and fuel refineries while it carries out a review, even though the buyers had already raised money to complete the transactions, which were signed under the previous government.

The back-to-back policy shifts may cause drillers to rethink deploying billions of dollars in Brazil, which ranked as the world's eighth-largest oil producer in 2021, according to the latest data available from the US Energy Information Administration.

Two deep-water fields that could be affected if companies hold back investments include Shell's Gato do Mato and Equinor's Pão de Açúcar, which are still in the design phase and haven't yet been approved for development, according to Marcelo de Assis, the head of Latin American upstream research at consultancy Wood Mackenzie Ltd.

"Everyone will be checking their portfolios, especially the new investments," de Assis says. "They will look at the costs and risks compared to projects in places like Uganda." The companies declined to comment on specific projects, though Norway's Equinor ASA says there needs to be "absolute respect" for contracts to justify long-term investments.

Lula's recent moves mark a clear departure from the generally accommodating stance toward investors that characterized his first two presidential terms, which extended from 2003 through 2010. Since taking office in January, he's publicly criticized the central bank for keeping interest rates high, saying it's stifling the economy,

Edited by Cristina Lindblad

DADO GALDIERI/BLOOMBERG. OLIVES: ALAMY. DATA: US ENERGY INFORMATION ADMINISTRATION



▲ A Petrobras production vessel dispatched to the Sépia oil field, in which TotalEnergies is a partner

and called into question whether the institution should be autonomous. On several occasions, his comments on these matters have sent financial markets reeling.

Like many world leaders, Lula is eager to tap windfall oil profits to shore up public finances and kick-start growth. Apart from the export tax, he's publicly bemoaned the record dividends Petrobras, the onetime oil monopoly, has paid out to shareholders, saying the company should be pumping excess profit back into the economy.

On March 8, Shell, along with Equinor, Galp Energia, Repsol and TotalEnergies, filed an injunction against the new export tax, which is scheduled to last four months but some fear could become permanent. Shell said in a statement that the levy had been "announced with no significant consultation with the industry." The Brazilian Petroleum and Gas Institute, a trade group that represents local as well as foreign companies, was swift to criticize the tax.

Such moves aren't uncommon in other parts of Latin America, including Argentina, Bolivia, Ecuador and Venezuela. Leftist governments in those nations have amped up pressure on local oil producers in recent decades, including retroactively altering licenses and deal terms.

In Mexico, President Andrés Manuel López Obrador, a longtime ally of Lula's, ended competitive oil auctions in 2018 that were part of landmark energy reforms carried out a decade ago. And last year his government sided with the national oil company, Petróleos Mexicanos, in a dispute over control of an 800 million-barrel oil field that was discovered by Houston's Talos Energy Inc.

Even Jean Paul Prates, whom Lula handpicked to run Petrobras, said at an international oil conference in Houston earlier this month that the export tax wasn't a smart way to resolve Brazil's fiscal problems, though he added that he was confident the tax would expire in June, as planned.

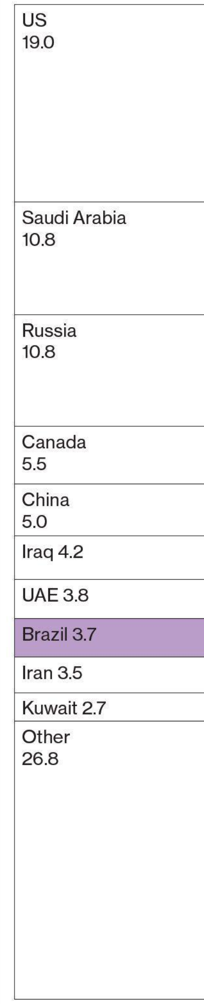
The signs so far are that foreign companies want to keep operating in Brazil. Shell and Equinor have signed collaboration agreements with Petrobras since the tax was announced, a clear indication they aren't rushing for the exits.

The levy was triggered by an internal battle in Lula's cabinet over how to close a budget deficit, a key requirement for bringing down high interest rates that are hobbling the economy. The government decided to gradually reinstate federal taxes on fuels that were suspended by the previous administration. The export tax will shore up revenue until the fuel taxes are completely restored.

The oil industry is already grappling with unpredictable price swings and geologic risk, says Telmo Ghiorzi, the head of a Brazilian association of oil services providers known as AbesPetro. Adding contract uncertainty will discourage explorers from drilling deep-water exploration wells, which can cost more than $100 million each. "It's oil economics 101," Ghiorzi says. "You're telling the investor to reduce activity."
—Peter Millard

THE BOTTOM LINE Oil majors operating in Brazil are concerned that the new government may join others in the region in pressing for a bigger cut of their profits.

▼ 2021 world oil production, in millions of barrels per day



The Perils of Protectionism



● Trump's tariffs couldn't save the California olive industry

Rod Burkett's surrender came more from exasperation than defeat. After cultivating olive trees in the heart of California's farming belt for 30 years, he finally sold his groves in 2022. "I just threw my hands up and said, 'To hell with it,'" says Burkett, the former chairman of the Olive Growers Council of California and an early supporter of former President Donald Trump's ▶

◀ tariffs on olive imports from Spain.

Burkett says high fertilizer prices, rising labor costs, water shortages and steep taxes all factored into his decision. But his primary reason for walking away is that farmers in other countries—Spain, in particular—can grow, ship and sell their table olives in America at far cheaper prices. "It has been a great industry, but as far as long-term growth, I just don't see it," he says.

The withering away of California's olive industry is a case study in how protectionist policies can backfire, creating losers on both sides—something to consider as the US and European Union gear up for a new subsidies race centered on semiconductors and electric vehicles.

Olives have been growing in California since the 18th century, when Spanish missionaries planted groves alongside the 21 Catholic missions stretching from San Diego to San Francisco. Today, most of the cultivation is centered in the Central Valley, a 400-mile stretch of fertile land between the Pacific coast and the Sierra Nevada mountain range that's the source of almost half of all fruits, vegetables and nuts grown in the US.

In recent years, it's become clear that Golden State producers of table olives—the kind used as toppings for pizzas and salads—can't compete with low-priced imports from Spain, the world's largest olive producer.

US officials allege that the Spanish government offers trade-distorting subsidies to farmers, who then sell olives in the US at below-market prices. California producers also say Spanish growers have been able to tap state aid to finance a shift to high-density groves, which can be quickly harvested with machines that shake olives from their branches. It's a capital-intensive switch that requires growers to uproot old trees and plant new ones in tighter configurations, which can take as long as seven years to reach commercial production.

A decade ago, researchers at the University of California at Davis warned that if the state's table olive industry didn't upgrade to machine harvesting, "it is only a matter of time before table olives are no longer produced in California."

Cost pressures on California growers are compounded by rising wages, decades of drought and stiff water restrictions, which are forcing many family farms to uproot their trees and switch to more lucrative crops such as almonds and walnuts. "As the industry becomes more stressed and the profit margins become tighter, you will see a departure from table olives to other crops or solar farms," says Bart Hill, a second-generation olive grower in Bakersfield. "I'd hate to think of putting solar panels on such beautiful, fertile soil in the best climate in the world."



▲ Harvesting olives in Woodlake, California

About two-thirds of California's table olive acreage has disappeared over the past 20 years, falling to 12,000 acres in 2022 from 36,000 in 2003, according to the US Department of Agriculture. In comparison, Spain boasts more than 6.7 million acres of olive groves, of which 500,000 are dedicated to growing table olives.

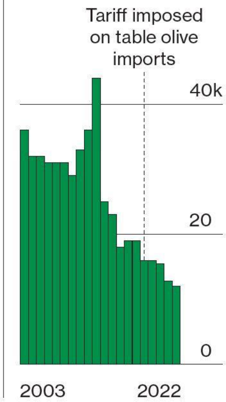
Relief for California's olive growers came in 2018 when Trump imposed an average 35.5% tariff rate on US imports of Spanish table olives, which totaled almost $70 million annually at the time. The effect of the duties—which Europe viewed as a slap in the face from a long-standing ally—was immediate, with shipments from Spain plunging 72% in the first two months the tariffs were in place, according to the European Commission.

"The olives dispute was small but very important for Spain," says Cecilia Malmstrom, who was EU trade commissioner at the time. "We always saw it as another example of policies that were creating tensions in the US and EU trade relationship."

The US tariffs came after the two remaining American processors of ripe olives—Bell-Carter Foods Inc. and the Musco Family Olive Co.—lobbied the Trump administration, arguing that Spain's subsidized olives were irreparably harming US producers. "The pricing was well below what we could offer in California," says Tim Carter, the former chief executive officer of Bell-Carter Foods.

While Trump's tariffs initially helped California growers preserve some market share, the trade conflict soon spiraled out of control and raised costs for table olive producers on both sides of the Atlantic. It also created an opening for Greek

▼ California table olive bearing acreage



CALIFORNIA: MATT BLACK/MAGNUM PHOTOS/TRUNK ARCHIVE. DATA: US DEPARTMENT OF AGRICULTURE

exporters of table olives, who quickly filled the market gap left by the falloff in Spanish imports.

First, farmers in Spain persuaded the EU to file a complaint at the Geneva-based World Trade Organization, which largely ruled in the EU's favor. Then Trump hiked Spanish olive tariffs by an additional 25% again in 2019 as part of a transatlantic trade dispute over subsidies to aircraft makers Boeing Co. and Airbus SE. In response, Europe struck back with its own tariffs on tens of billions of dollars' worth of American goods—including California table olives.

When Joe Biden assumed the presidency in 2021, he shelved tariffs on transatlantic trade worth $11.5 billion and paused the Boeing-Airbus dispute as part of a broader effort to normalize trade relations with the EU. But the US duties on olives have remained in place, though they've been lowered slightly, to 28.4%, because US officials say Spain is still subsidizing growers, who are dumping olives on the US market.

"The attitude of the Biden government, which is the same as that of the Trump government, does not help good relations with Spain or the EU at all," says Antonio de Mora, the secretary general of the Spanish Association of Table Olive Exporters & Industrialists.

The fracas over table olives, which covers less than 0.01% of total transatlantic trade flows, is emblematic of the quandaries Biden faces: As his administration tries to "friend-shore" supply chains away from China and Russia and toward US allies in Europe, it's also attempting to halt or even reverse the loss of American jobs caused by decades of trade liberalization.

"This case is not particularly helpful for Biden's transatlantic reset," says Malmstrom, who's now a senior fellow at the Washington-based Peterson Institute for International Economics.

Trump once said that "trade wars are good and easy to win," but the real winners in the olives dispute were lobbyists and trade lawyers on both sides of the Atlantic. Spanish growers acknowledge they paid more than $8.5 million in legal fees to argue their case before regulators in Washington and WTO panelists in Geneva.

Even Carter, who personally lobbied for the tariffs in 2017, questions whether the fight was worth it in the end. "It was very expensive for the industry to go through the whole process," he says. "It's millions and millions of dollars. I wonder if that money could have been spent in another way."

Last year, Carter agreed to sell his 100-year-old family business to a major Spanish olive company, Aceitunas Guadalquivir SL, for an undisclosed sum. "As the tariffs unfolded and the pandemic unfolded, it became clear to my family that it was probably time to pull our chips off the table," he says. "My dog is no longer in the fight." —*Bryce Baschuk*

THE BOTTOM LINE US tariffs on imports of Spanish table olives have failed to stem the decline of the California olive industry, which is plagued by drought and high labor costs.

New Money, New Problems

● In Naples, an influx of wealthy out-of-towners is displacing lower-income workers

The city of Naples on Florida's Gulf Coast is paradise on Earth, if you believe those slick websites that rank the best US cities to live or retire in. But if you talk with the people who work in its hospitals, restaurants and city government, you'll get another story. They'd like to live in Naples, too, but most of them can't afford to.

Naples is home to the second-richest ZIP code in the US, after Miami Beach. Median household income stood at about $125,000 in 2021, compared with about $62,000 in Florida overall, according to the Census Bureau. The city of 19,000 landed on a 2022 list of least affordable places for renters compiled by the National Apartment Association.

Amid a dearth of reasonably priced housing, at least 90% of city employees live outside Naples. Job vacancies are going unfilled, leading to chronic staffing shortages. The shortfall among firefighters, police officers and other essential workers in Collier County, which includes Naples, verges on unsafe, according to one local advocate. Private-sector employers have converted a hotel into apartments for workers as a temporary fix.

"I think we're at the point of critical mass here," says Jay Boodheshwar, who became city manager last year. Even Boodheshwar, whose salary is ▶

◀ $270,000, lives outside the city because a home of comparable size and price to one he previously owned in West Palm Beach wasn't available in Naples.

Once a sleepy fishing village and then the self-declared "golf capital of the world," Naples is emblematic of broader shifts in wealth across the nation. Drawn by lower taxes, better weather and laxer Covid-19 pandemic rules, scores of millionaires have flocked to Sun Belt cities since 2020. Some of those places have the same problems as Naples.

Miami, which fashions itself as Wall Street South, was named the US's least affordable housing market by Realty Hop in December. Austin, popular with tech workers, doesn't have enough homes—affordable or otherwise—to keep up with demand. Both are wrestling with traffic congestion because they lack large public transportation networks.

Naples experienced a boom in sales of opulent homes during the pandemic. The median sale price climbed to $570,000 last year, an almost 30% increase from the previous year—more than in any other large metro area in Florida, according to Attom, a property data provider.

The city's housing problems were aggravated by Hurricane Ian, a category 4 storm that swept through in September, damaging thousands of homes. Yet extreme weather isn't standing in the way of Naples's ambitions. In the fall, a high school that cost $100 million to build is scheduled to open to alleviate overcrowding at an existing one that has about 600 more students than it was meant to serve. The Athens Group and MSD Partners are redeveloping a beachside resort into a Four Seasons hotel and luxury residential community that's set to open in 2024. Members-only restaurants and wine bars are cropping up.

Meanwhile, the city government struggles to retain and attract staff. There are 60 vacancies in a workforce of 510 employees. At the county sheriff's office, almost one-fourth of employees live outside Collier County. Boodheshwar says he knows of one firefighter who commutes from the Miami area, about two hours away, for a 24-hour shift.

To tackle the housing issue, employers have had to get creative. NCH Healthcare System, which has about 4,500 employees, has made 20 units available at a former Super 8 hotel as part of a collaboration with other companies to turn the hotel into workforce housing, says Shawn McConnell, a spokesperson. NCH has also struck deals with residents who have second homes in Naples and are willing to rent to physicians or nurses.

The area's housing issues have become politically divisive. In Collier County late last month, the five-person board of commissioners fired Joe Trachtenberg, a local resident it had engaged to advise on housing matters. Trachtenberg wants the county to rewrite zoning laws limiting housing density and building heights to clear the way for more construction. Officials resist changing the rules, he says, because they "love" the higher property values. Says Trachtenberg: "If we can't hire police, if we can't hire firemen and EMTs, that's going to ultimately have an impact."

Chris Hall, who serves on the board, says the county has added 2,443 new affordable units since 2019 by partnering with the private sector. Local experts have said the county needs 10,000 more such units.

Naples has long been home to "Midwest money," given that the city is right off Interstate 75, which stretches up to Michigan, says Vincenzo Betulia, a local chef who owns several upscale restaurants. Those residents are less flashy, he says; if they're wealthy, they take pains to conceal it. "They drive around in Toyota Camrys," he says.

But Naples is getting more ostentatious as newcomers from California, New Jersey and New York arrive. In February, a beachfront estate was listed for sale for $88 million—less than a year after it had sold for $62 million, then a record for the county.

▼ Rent as a share of income in Q3 2022, for selected metro areas

Port St. Lucie, Florida	45.5%
Boise City-Nampa, Idaho	42.5%
Provo-Orem, Utah	42.0%
Naples-Marco Island, Florida	41.9%
Logan, Utah-Idaho	41.6%
Flagstaff, Arizona	41.4%
Honolulu, Hawaii	41.1%
Vallejo-Fairfield, California	41.1%
Riverside-San Bernardino-Ontario, California	40.8%
Grand Rapids-Wyoming, Michigan	40.6%



▲ Village Walk, a gated community in Naples

Tom Kluttz, senior portfolio manager at Huntington Private Bank, moved to Naples from Columbus, Ohio, seven months ago, to "follow the money." After many of his clients decamped for Florida during the pandemic, Kluttz's family did, too. "It's everything and more that we were hoping for," he says, though he laments that his 14-mile morning commute can sometimes take an hour. —*Amanda Albright*

THE BOTTOM LINE Employers in Naples, a city in Florida with one of the most affluent ZIP codes in the country, are struggling to fill vacancies amid a housing affordability crisis.

PHOTOGRAPH BY DARRON R. SILVA FOR BLOOMBERG BUSINESSWEEK. DATA: NATIONAL APARTMENT ASSOCIATION ANALYSIS OF TRANSUNION DATA



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● Ruggiero

PHOTOGRAPH BY KHOLOOD EID FOR BLOOMBERG BUSINESSWEEK

March 20, 2023

Edited by Rebecca Penty and David Rocks

Squid's ability to flourish in warmer waters makes it fitting for a diet for the changing environment

Ask Sal Ruggiero for the best squid in the US Northeast, and he'll recommend the longfin variety freshly caught off the Rhode Island coast. It's the tastiest, with a crisp bite—not as soft as imported squid, he says. Ruggiero, known as the "Calamari Kid," is the general manager of the Joe Monani Fish Co. at the New Fulton Fish Market in the Bronx, New York. He sells fresh Rhode Island longfin squid for about $6 a pound, compared with $4 for the frozen stuff shipped in from China and India.

The possibilities for cooking squid, known as calamari in culinary applications, are almost boundless, says Ruggiero: "You could fry it, you could steam it, you could grill it." He eats it at least once a week, sometimes twice.

Squid's appeal goes far beyond flavor. It's hailed as a climate winner for the dinner plate by fishers, mongers and marine biologists. A member of the Cephalopoda class along with octopuses and cuttlefish, squid has high growth rates, short lifespans (especially compared with large finfish such as salmon and tuna) and high plasticity, meaning the fish can alter their behaviors and bodies—for example, size at maturity—based on their environment. So the species is constantly becoming better equipped to survive the changing state of the ocean. Crucially these days, a growing body of evidence suggests that this adaptability is helping squid proliferate in warmer waters.

For some species of fish, climate change could cause them to be smaller and even raise their risk of extinction, a 2021 study published in *Nature Climate Change* found. Impacts on ocean populations are already visible. In 2019 a massive mussel die-off occurred during a heat wave on the Northern California coast. In the Bering Sea, sea ice is shrinking, threatening the algae that grows on it and feeds plankton eaten by young pollock.

By contrast, global warming appears to be helping squid. A 2016 study out of Australia, entitled "Global Proliferation of Cephalopods" and published in *Current Biology*, concluded that "cephalopod populations have increased globally." The authors found a rise in populations over the past six decades, using data from all major oceanic regions. That indicates, they said, "that these ecologically and commercially important invertebrates may have benefited from a changing ocean environment."

A squid-focused study looking at the North Sea and northeastern Atlantic Ocean, published in the *Journal of Biogeography*, also in 2016, concluded that, "At least for the last 35 years, climate change appears to have been largely favourable." And last year, European researchers published a study in *Biodiversity and Conservation* finding that "the last century has been a period of pronounced cephalopod expansion in the North East Atlantic."

On the US West Coast, meanwhile, scientists found a fivefold increase in squid from the Central California coast to the northern tip of Washington from 1998 to 2019, the result of marine heat waves driving the invertebrate farther north than where they're typically caught, according to a 2022 study led by scientists at the National Oceanic and Atmospheric Administration. (Mary Hunsicker, an author of the study, notes that the change may have been only in distribution, not necessarily abundance, which is harder to track.)

In Oregon, this has turned squid fishing into a new industry, if still a minor one. Commercial squid landings rocketed from zero in 2015 to more than 4,600 metric tons in 2020. It's nowhere near as big a business as the local Dungeness crab, which was worth almost $73 million that year, but the roughly $6 million in market value for squid in 2020 makes it increasingly important.

Catching cephalopods commercially has its challenges, however, including the rise of offshore wind farming. East Coast seafood dealer Seafreeze Shoreside Inc. is leading a federal lawsuit to stop wind farm construction, arguing that noise from both construction and operation of the farms can disturb marine life and that fishermen won't be able to navigate their vessels near the farms, says Meghan Lapp, fisheries liaison for the company.

The offshore wind industry is working with the commercial fishing industry, including by developing leases with fishermen's input and advocating for a fund to pay for equipment upgrades, says Josh Kaplowitz, the American Clean Power Association's vice president for offshore wind.

Squid catches are notoriously unpredictable. Banner years can be followed by less productive ones, and for the latter, there isn't enough research to determine whether there are actually less squid or if they're just moving to places where they're harder to catch. More than 10,000 metric tons of longfin squid were caught in Rhode Island in 2016, a record year. "We called it Squidnado," says NOAA researcher Anna Mercer. The next year, fishermen in the state landed less than half that amount, one of only three years since 2010 when the catch has been below 5,000 metric tons.

And despite their fortitude, squid can be overfished. The US has quotas, but European cephalopod fisheries are largely unregulated, and a study in *Science Advances* published this month highlighted the risk of exploiting squid stocks when they're not properly managed. "There's a really high risk of overfishing," says Daniel Oesterwind, a scientist at the Thünen Institute of ▶

◀ Baltic Sea Fisheries in Germany and lead author of the 2022 *Biodiversity and Conservation* study. The likelihood increases as more vessels operate for longer periods, making proper fisheries management even more important. "If you fish the species before they reproduce," he says, "it's a dead end."

As common as calamari has become in restaurants—a staple on bar menus, as well as featured in 21% of all US restaurants, including 42% of fine dining establishments, according to food and beverage market researcher Datassential—squid still hasn't cracked the country's top 10 most popular seafoods. Sustainability-minded chefs are trying to entice diners with more than just the battered, deep-fried appetizer, though. Chef Bill Telepan served grilled Rhode Island squid sliced atop a cherry tomato salad with arugula at his namesake eatery on New York's Upper West Side, which closed in 2016, and then at the city's seafood-centric Oceana, while chef Tu David Phu, based in Oakland, California, likes it in chao ca, a Vietnamese fish porridge.

However it's prepared, squid could increasingly be featured in diets that take the changing climate into account, says Michael Hoffman, a professor emeritus at Cornell University and co-author of *Our Changing Menu: Climate Change and the Foods We Love and Need*. "Next time, you're out," he says about calamari, "take a taste and get used to what the future's going to be like." —*Deena Shanker*

THE BOTTOM LINE While climate change threatens many marine species, squid is thriving. Sustainability-minded diners don't yet appear to have caught on, as calamari still isn't among the most popular seafoods in the US.

Pumping Heat in Hamburg

The German port city plans to store hot water underground and bring it up to heat homes in the winter

Five miles east of the German port city of Hamburg lies Tiefstack, a massive coal power plant that local officials want to shut down. While replacing its output will require a patchwork of smaller solutions, one piece is warming water with so-called waste heat from steel mills and aluminum foundries and storing it almost a mile underground. "The idea has been around since the thermos," says Kirsten Fust, chief engineer at Energiewerke Hamburg, the local power utility.

The experimental technology, called aquifer thermal energy storage, pumps hot water 1,300 meters below the surface, then brings it back up for use in municipal

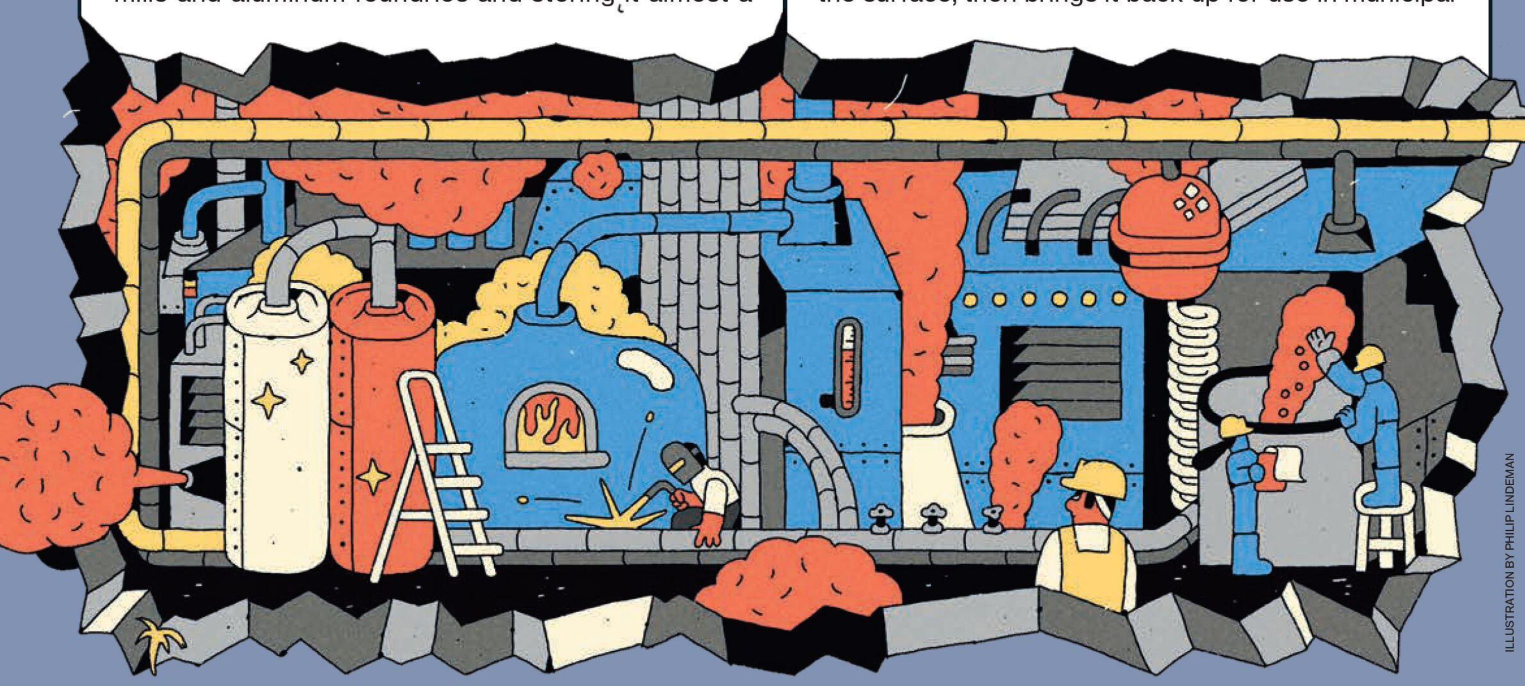
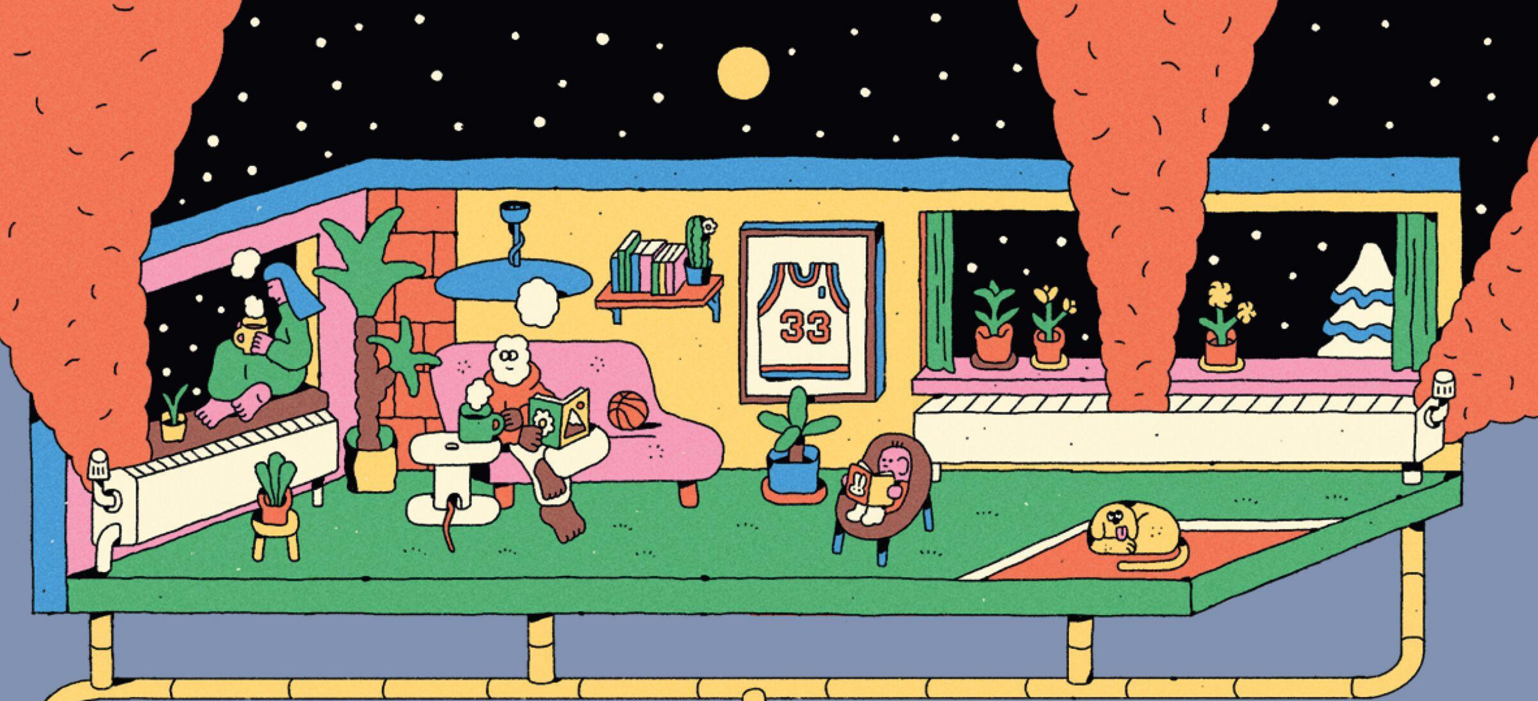


ILLUSTRATION BY PHILIP LINDEMAN



systems known as district heating when it's needed. If all goes as planned, by next year the technology will be able to provide heat to more than 13,000 households.

Energy storage is a crucial component of any transition to a lower-carbon economy. The primary sources of renewable energy, wind turbines and solar collection panels, provide power only when the wind is blowing or the sun is shining. So they must be augmented either by conventional plants that can be brought quickly on- and offline to meet shifts in demand, or by storage systems. Batteries, of course, are one option, but they're expensive. Their cost has spurred a search for cheaper alternatives that provide power or warmth on demand, such as thermal reservoirs that store excess heat generated by industry.

Hamburg already has some above-ground heat storage facilities, effectively massive insulated tanks filled with water heated by electricity from wind turbines that's not needed in the grid. But Fust says the underground reservoir offers a simpler, more energy-efficient solution that will free up space on the surface. The project's success will depend on how many cavities the rock has and the thickness of the strata deep underground, which will determine the quantity of hot water it can store. "The better the stone, the better it absorbs heat," says Fust.

The city has drilled an initial hole for the project at a cost of just over €10 million ($10.7 million), and geologists are testing the stone. If it meets their expectations they'll drill a second hole, allowing water to circulate through the system. In the summer, the groundwater in the aquifer—which is about 45C (113F)—will be pumped to the surface through one borehole, heated to 90C as it circulates through nearby millworks, then pumped back down into the porous sandstone via a second borehole. The rock structure is expected to hold more than 100 million liters (26 million gallons) of water, maintaining a temperature of about 70C until the cold season, when it can be returned to the surface and fed into the district heating network.

Tiefstack, Hamburg's biggest coal power plant, has the capacity to produce 300 megawatts of electricity and 190MW of thermal energy that's used to heat buildings in neighborhoods around the plant. With Germany seeking to eliminate the use of coal by 2030, cities across the country are watching, because heating homes and buildings accounts for about a third of Germany's energy-related CO_2 emissions.

District heating systems, which distribute steam or hot water to multiple buildings through networks of insulated pipes, will be a major part of the transition. They serve about 5.5 million German households, 13% of the total, and the government and various utilities plan to expand the systems. "District heating plays a key role in making the heat supply greenhouse-gas neutral," Michael Kellner, a deputy minister of economy and climate, said at a March 6 ceremony marking the start of a project to expand the technology in Neuruppin, a city of 30,000 an hour's drive north of Berlin.

26m
gallons of water may be stored in the aquifer

Ingrid Stober, a geologist at the University of Freiburg, says Germany has many places where such installations might work. There's already one below parliament in Berlin, and she notes that underground storage is far more efficient than aboveground systems, which cool down much faster. "In aquifer systems, the heat is preserved underground, so it can satisfy a baseline demand for heating," she says. "And, well, they're just bigger." —*Josefine Fokuhl*

THE BOTTOM LINE The system warms water by circulating it around industrial plants, then stores it 1,300 meters underground, where it retains most of its heat. In the winter, the water is used in municipal heating systems.



Cleaner Clothing Dye, Made From Bacteria

A UK company produces colors with less water than conventional methods and no toxic chemicals

The global fashion industry consumes trillions of gallons of water each year to make clothes, and textile dyeing is a major source of both water use and pollution. By employing bacteria to replicate colors found in nature, a UK biotech can produce dyes with a fraction of the water used in conventional methods and no toxic chemicals.

Colorifix Ltd., based in Norwich, England, identifies feathers, insects and plants that display the hues it wants to create. Then it digitally sources the DNA sequence responsible for the natural pigment and engineers bacteria to produce the color. Through a fermentation process similar to making beer, the microorganisms are fed water, sugar, yeast and plant byproducts, and within a couple of days they generate a large volume of dye liquor that can be used in standard machines by commercial dye houses. "As long as we give them water and nutrients, they'll keep dividing and growing and making the color," says Orr Yarkoni, co-founder and chief executive officer of Colorifix.

An environmental impact analysis prepared for the company last year showed that dyeing using the Colorifix process requires 81% less water and 41% less natural gas than conventional methods. The energy savings are a result of the bacteria needing a temperature of only 37C (99F) for dyeing, compared with 80C to 130C using standard methods, Yarkoni says. It's not a perfect solution, because dye houses must still prepare the fabric using a so-called half-bleaching, which requires water, chemical and energy inputs.

Natural pigments have long been used to dye fabrics. The modern fashion industry mostly uses cheaper synthetic dyes that deliver more consistent results but include chemical compounds that are harmful to human health and the environment. The dyeing and treatment of textiles is responsible for one-fifth of industrial water pollution worldwide, according to a report by the Ellen MacArthur Foundation, a charity that advocates the creation of a circular economy, a concept that includes minimizing waste, making the most of materials and regenerating nature.



The problem is sure to worsen: The global textile dyes market is forecast to grow to about $16.1 billion in revenue by 2030 up from about $10.7 billion in 2021, according to Polaris Market Research. "We believe the industry needs to urgently shift towards more sustainable alternatives," Hiral Patel, global head of sustainable and thematic research at Barclays Bank Plc, said in an email, noting that nearly 90% of clothes are dyed synthetically. Even as innovations emerge, "there are many barriers to overcome to prove commercial viability," she said.

Fast-fashion brand Hennes & Mauritz AB, which aims to acquire all its materials from recycled or more sustainable sources by 2030, has invested about 130 million Swedish kronor ($12.1 million) in Colorifix since 2018, via its venture capital arm. The retailer has also invested in Alchemie Technology, a UK firm that provides a digital manufacturing process for textile dyeing. In addition, it works closely with Imogo, a Swedish company that's designed a spray application for dyeing, and Italy's Officina+39, which makes pigment powders from used clothing and textile waste.

"The dyeing process is a key area to address in order for the fashion industry to move toward a more sustainable one," Nellie Lindeborg, a sustainability specialist at H&M, said in an email. H&M's plans to release a collection using Colorifix's technology in 2021 ran into unforeseen production challenges unrelated to the Colorifix process, but the companies are still in talks about how the clothing brand can use the technology.

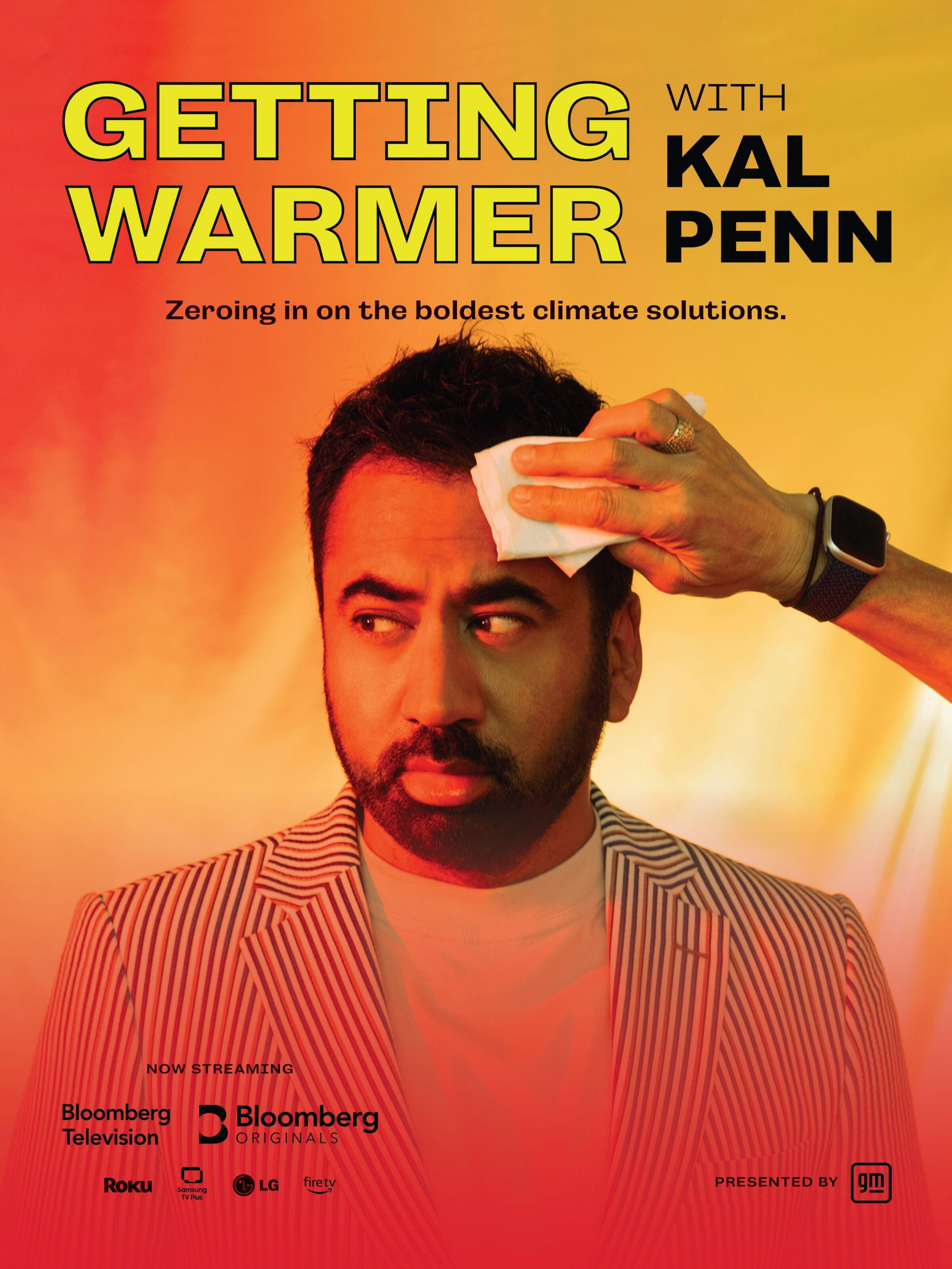
Sustainable fashion brand Pangaia previously produced a cocoon blue hoodie using Colorifix dye and sold it for £150 ($181) on its website. And a dress by Stella McCartney that was featured in an exhibition in Amsterdam in 2018 was dyed in a darker shade of blue produced by Colorifix.

The company's research and development is done in England, and it has a manufacturing subsidiary in Portugal, Yarkoni says. Its main business is to supply dye houses, and it has customers in Bosnia, Italy and Portugal and is expanding into India, Sri Lanka and Turkey, he says. Colorifix is also developing a pigment that can help provide protection against microbes and viruses, which could eventually be used in the health-care sector.

Natural dyes could one day largely replace synthetic ones, though it might take decades, says Yarkoni. "It's a matter of time when the product range is big enough, when we can make every color on every material at the same price," he says. —*Lisa Pham*

THE BOTTOM LINE Coloring clothing with synthetic dyes is a wasteful business. A biotech that produces pigments using a process similar to beer-making is among companies backed by H&M as the retailer tackles the issue.

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The US thinks the Chinese-owned social media app is a major national security risk. TikTok is running out of ways to avoid a ban

On Feb. 1, TikTok's top lobbyists thought the meeting on Capitol Hill was going well. Their slide presentation, which was meant to show how hard TikTok worked to prevent data generated in the US from ending up in China, was capturing the attention of their congressional antagonists—Mike Gallagher, a Wisconsin Republican, and Raja Krishnamoorthi, an Illinois Democrat.

This was the bipartisan duo leading a new House committee focused on China. They'd already sponsored a bill seeking to ban the app on the suspicion, commonly held in national security circles, that the Chinese Communist Party could use TikTok to track and manipulate Americans because it's owned by a company based in Beijing, called ByteDance Ltd.

Krishnamoorthi asked a question TikTok was expecting: What about the law in China that forces companies based there to comply with any government data requests?

Michael Beckerman, TikTok's well-coiffed head of US public policy, reassured Krishnamoorthi that users have nothing to worry about, according to two of the meeting's attendees. TikTok is taking extreme measures to isolate its US operations. Beckerman said the company is housing data with an American partner, Oracle Corp., and has agreed to accept oversight from a US government-appointed board, in a $1.5 billion plan called Project Texas—all explained in slides on the iPad that the lawmakers were holding and that congressional staffers were straining to see.

The representatives were familiar with the plan. But they were also familiar with the loyalty China demands from its domestic companies. Gallagher asked: If China were to order TikTok to remove content about the government's oppression of the Uyghur minority in Western China, what would TikTok do? Beckerman promised the content wouldn't be censored, but he appeared flustered.

So it goes for TikTok in Washington, where bashing the company seems to be a major thing Republicans and Democrats actually enjoy doing together. It's an area where the Biden administration can find rare bipartisan agreement. Congress is giving the president plenty of options, with four bills including Gallagher's looking to limit TikTok's power.

On March 7, the White House threw its support behind one Senate bill, introduced by Virginia Democrat Mark Warner and South Dakota Republican John Thune, that could give the president the ability to evaluate the national security risk of foreign-owned technology and limit its US operations if necessary. "Act quickly to send it to the president's desk," the White House urged. Three days later, a former TikTok employee told Congress he thinks Project Texas is deeply flawed and that US user data will still be at risk even after the promised protections are implemented. "Anyone who left the company in February of 2022 would have no knowledge of the current status of Project Texas," a TikTok spokeswoman says.



TikTok's leadership is now considering more drastic measures to keep operating in the US, including separating from its parent, according to people familiar with the matter. A divestiture or stake sale would require China's approval, and it's not clear there would be a buyer. But TikTok's leaders think the alternative—a full ban—would be a bigger risk to ByteDance's financial success, one of the people says.

Breaking off from ByteDance, which TikTok hasn't told Congress it's considering, would be a last resort. (In the end, ByteDance may not have a choice: The Biden administration recently warned the company to spin off TikTok or face a ban, according to people familiar with the matter.) "Neither a ban of TikTok nor a divestiture of TikTok from ByteDance does anything to address national security concerns about data transfers," TikTok said in a statement, touting the benefits of Project Texas. TikTok's policy staffers and its chief executive officer, Shou Chew, have been frustrated for months that its biggest opponents in Congress seem unmoved by the expensive, expansive steps the company is taking to safeguard user data. The app, beloved especially by American teens and tweens, is caught in a geopolitical maelstrom it's struggled to navigate.

On the day of the meeting with Gallagher and Krishnamoorthi, the news was not in TikTok's favor. US military officials were debating whether to shoot down a Chinese spy balloon that came to the public's attention when it passed too close to a US Air Force base in Montana. Panic over the balloon translated easily into panic over the popular video app. "A big Chinese balloon in the sky and millions of Chinese TikTok balloons on our phones," Utah Republican Senator Mitt Romney tweeted. "Let's shut them all down."

Americans, on average, spend 56 minutes a day on TikTok, more than on either Facebook or Instagram, according to market researcher Insider Intelligence. The lawmakers giving dire warnings on Chinese spying say the app also represents a gateway drug for Chinese propaganda—"digital fentanyl," as Gallagher called it. For users, that's hard to square with the app's videos of Noodle the pug and Francis the train guy.

Limiting TikTok, however geopolitically alluring, would be domestically unpopular and unprecedented. It's more the kind of thing that would happen in China, which has blocked Facebook since 2009. Commerce Secretary Gina Raimondo last month told Bloomberg News that banning the app would "literally lose every voter under 35, forever."

ByteDance gained its foothold in the US by starting with young internet users who weren't already obsessed with Instagram and Snapchat. In 2017, ByteDance bought Musical.ly, a Chinese app popular among preteens for sharing videos of people lip-syncing to popular songs, and turned it into TikTok. American middle schools and high schools became backdrops for

Commerce Secretary Gina Raimondo has said that banning TikTok would “literally lose every voter under 35, forever”

goofy coordinated dances, known as “challenges” on the app; anyone who went viral sharing their challenge gained online clout. But at the time, the app was still pretty minor league.

Then the pandemic happened. Schools switched to virtual-only, adults locked down with their children, and nobody had anything noteworthy to post on their Instagram grids. TikTok, which provided lighthearted humor from everyday people, became a salve for America’s collective Covid-19 anxiety and boredom. A popular trend could cause a song to surge to the top of the charts, upending the music industry and giving a viral boost to the fame of stars like Olivia Rodrigo. The effects in fashion and beauty could lead to a run on products, such as Clinique’s Almost Lipstick in Black Honey, or catapult a TV show like Netflix’s *Squid Game* to the most-watched list.



Central to TikTok’s success is its algorithm, which guesses users’ interests based on what they decide to watch, drawing them to niche, sometimes weirdly specific, content, from home inspectors sharing their worst discoveries to people dancing to customer service line hold music. That charming technology tends to unnerve national security experts. If TikTok can figure out how to entertain individual US users so specifically and successfully, and TikTok is owned by a Chinese company, what could China do with that power?

At the height of the pandemic, Covid was straining relations between China and the US, with factory shutdowns and export controls putting stress on the supply chain for electronics and more. TikTok was the sort of Chinese export that the US couldn’t put on a mandated inspection list. But it was clear that anti-TikTokism was brewing around the world. India abruptly banned TikTok in June 2020 during a dispute with China, citing national security concerns.

TikTok, sensing the political fight ahead in its most lucrative market, tried branding itself to be as American as possible. Public relations representatives started telling journalists TikTok was incorporated in the Cayman Islands—therefore not Beijing-based. The company hired a new CEO, Kevin Mayer, the well-known head of Walt Disney Co.’s streaming business, just after he led the wildly successful launch of Disney+. He was tasked with Americanizing the company’s executive ranks and being a friendly face in Washington.

TikTok’s best advocates were its own users, who were willing to go to bat for the app without being asked. When President Donald Trump issued an executive order to ban TikTok in August 2020, America’s youth fought back with impassioned videos about how important the app had become in their lives. A collection of TikTok users pranked Trump by registering for one of his rallies, causing him to expect many more attendees than actually showed—which angered him further.

After months of negotiations with the White House to avoid a ban, ByteDance settled on a plan to sell TikTok to Oracle, a company that has always had strong ties to the national security establishment. Its chairman, Larry Ellison, has helped fundraise for Trump, making Oracle an ideal shield from Republican China hawks. A court issued an injunction to block Trump’s order. That order was dropped by the Biden administration and replaced with a new one calling for a national security review.

By then, Mayer was long gone. He’d lasted only four months, exhausted by the political nature of the role. Ever since, the company has struggled to hire seasoned, public-facing executives willing to thrust themselves in front of anti-China politicians and defend TikTok’s scruples, according to three people familiar with the matter.

In May 2021, Chew, a Singaporean and a former executive at the Chinese cellphone manufacturer Xiaomi Inc., took the CEO job. Since then he’s been spending most of his time in the US and Europe, trying to show regulators and TikTok’s advertisers that the app is already, in practice, disconnected from China and embedded in US culture. TikTok employees rarely see Chew in its Singapore offices and joke that nobody knows how tall he is. But Chew was at the Super Bowl, posting videos from Rihanna’s halftime show to TikTok, alongside other American tech and entertainment executives.

Chew seems uninterested in making the kind of open pleas for trust like the ones Mark Zuckerberg would deliver after a Facebook scandal. Nor does he like embarrassing his critics the way Elon Musk does at Twitter Inc. Instead, he’s been asking for private meetings to navigate TikTok’s position. The panel ▶



◀ with the most power to determine TikTok's fate, he reasons, is the Committee on Foreign Investment in the United States. Cfius, as it's known, is the interagency government committee that determines, for instance, whether Huawei Technologies Co. can sell smartphones in the country (no) and whether Broadcom Inc. can buy Qualcomm (also no).

Chew thought TikTok could negotiate with Cfius by sharing details about the company's data procedures and rules for employees—and that based on those facts, the government would gain confidence, according to people familiar with his plans. Oracle, which the government was no longer asking to buy TikTok, nevertheless remained its political shield and a big part of its pitch to Cfius. Under the Project Texas proposal, Oracle would house all US user data and audit TikTok's code. A three-person panel, approved by the government, would oversee these operations, and all employees of TikTok's new US Data Security entity would face the same extensive background vetting as government contractors do.

National security officials conducting the review of Project Texas aren't convinced by its promised protections. Officials at the Department of the Treasury had favored giving TikTok's offer a chance, but Department of Justice officials swayed other members of the committee toward rejecting the plan, according to people familiar with the discussions.



FBI Director Christopher Wray recently told Congress that TikTok "screams out with national security concerns." Plus, Capitol Hill staffers are suspicious of Oracle's incentives, according to people familiar with the matter. Because of TikTok's incredible growth, it's become one of Oracle's biggest cloud customers. Oracle wouldn't have much incentive to flag any suspicious activities, which could endanger its lucrative contract, they say. Oracle didn't respond to a request for comment.

While Cfius deliberated in private, Republican senators including Josh Hawley of Missouri and Marco Rubio of Florida latched on to critical news reports to wage a media campaign to ban the app. The usual critiques that follow all popular social media apps—that their content is addictive, that their algorithms negatively affect the mental health of teens, that they gather data in a way users don't understand—all seem more sinister with China's involvement.

Until late last year, TikTok largely ignored the blustering of lawmakers and officials it thought were spouting lies and who didn't understand the business, two people familiar with the strategy say. Non-engagement was obviously a mistake. In Washington, politics will shape the narrative surrounding any company that doesn't seek to write it itself. TikTok hasn't reported any lobbying expenditures, but its Chinese parent company has. ByteDance's first lobbying disclosure in Washington was $120,000 in the third quarter of 2019. In the second quarter of 2022, it spent $2.1 million.

But lobbying can only solve so much. When *Forbes* magazine published a report saying it was indeed possible for ByteDance employees in China to access US users' location data, what happened in response was worse: ByteDance employees dug into the IP addresses of the journalists to figure out who their sources were. The incident, which TikTok admitted to in December, "is a scandal that casts doubt on every promise TikTok has made about protecting personal information," Oregon Senator Ron Wyden, a Democrat, said at the time.

TikTok has been trying to remove the mystery around its app, building what it called a Transparency Center in Los Angeles—a building with rooms full of explanatory diagrams and cartoons about its data standards and algorithms to help legislators and journalists understand how it safeguards data and how its algorithms work. As TikTok's global head of risk response, Suzy Loftus, put it at the unveiling of the center: "We face very significant headwinds in the trust space."

The first federal anti-TikTok legislation to pass banned the app on US government devices. The European Union, Belgium and Canada have done the same. Some state lawmakers have taken similar steps; TikTok is blocked or banned on government employee devices in 25 states. In some states, that includes public school employees and college Wi-Fi networks.

At the University of Texas at Austin in January, it didn't take long for TikTok users on campus to figure out a workaround. Grace Featherston, a theater education major, says students simply switched to using cellular data or a different Wi-Fi signal. The ban did, however, make her mad. Featherston, with 26,000 followers, posts about musical theater. She compared the prospect of a ban to the government taking away abortion rights in the state.

If the app ultimately gets blocked in the US, it'd be akin to ripping out "an artifact of youth culture," says Ioana Literat, associate professor of communication, media and learning technologies design at Columbia University. "Knowing how bold and fearless they are about speaking up when it comes to something that they perceive as an injustice—which they would definitely perceive this as an injustice—I would expect a very strong reaction."

TikTokers may be a particularly dangerous voter group to scorn. Voters under 30 were the only age group in the 2022 US midterm election in which



the majority favored Democrats, by an impressive 28-point margin, according to Tufts University. The Democratic National Committee knows that—it has a TikTok account with more than 320,000 followers. Biden hosted TikTok influencers at the White House ahead of last year's midterm election. Democratic strategists say TikTok is useful not only to turn out young voters who skew blue, but also to mobilize them to donate to and volunteer for campaigns.

Most Republicans brush off such concerns, at least in public. Representative Tim Burchett, a Tennessee Republican on the House Committee on Foreign Affairs, says he "could care less" about the political blowback from banning TikTok. But speaking in private, some staffers working on the issue acknowledge that it might be too late to ban an app that's this popular, according to a senior Republican aide who declined to be named sharing private discussions.

That's one reason the divestiture solution has become so enticing for both parties. But if it happened, the Chinese government would have to review and sign off on it, because TikTok's technology is covered by that country's export controls. In August 2020, China's tech regulators updated a list of products that require approval before they're sold abroad to include the algorithms that ByteDance uses in TikTok. If China's regulators have any incentive to say yes to a sale, it's because doing so would help Beijing seem pro-industry after three years of subjecting China's private sector to strict Covid curbs and regulatory crackdowns, says Xiaomeng Lu, director of geo-technology at Eurasia Group.

Selling, banning or breaking off TikTok could take months or years. (A sale would be more likely than an initial public offering, which is just not financially necessary at TikTok and would likely keep ByteDance as a major investor, according to people familiar with the matter.) For both Cfius and TikTok critics in Congress, it's not clear how much of the company ByteDance would have to sell to no longer be considered in control. TikTok would prefer to stick with its Project Texas plan than endure a drawn-out divestiture process. The political tension with China has led Chew to joke that the spy balloons were sent for him, according to people familiar with the matter.

In the meantime, Chew seems to have shifted to a more public communication strategy out of pure urgency, according to people familiar with the matter. He's been called to testify in Congress on March 23 on the company's data privacy and security practices, its relationship with the Chinese Communist Party and the app's impact on kids. Ahead of his arrival, TikTok has flooded Washington with ads touting the company's trust and safety policies.

Chew has been meeting with bankers in New York and Miami, just in case he ends up navigating a major transaction. Meanwhile, his team has been preparing him for contentious questioning on the Hill, according to people familiar with the matter. He's been advised to steel himself and stay level, even if faced with inflammatory or false accusations, these people say. Don't be combative, but don't be overly defensive. Let the facts do the talking.

If that approach for the testimony doesn't work, though, TikTok may go on the offensive to fight for its survival, by equating limits on the app's existence with censorship, or even anti-Asian racism, and taking its fight out of Washington and to the public, two people familiar say. On March 14 at TikTok, the company's senior leaders discussed the upcoming hearing with staff. One person close to TikTok equates it to the congressional grillings of American tech leaders like Zuckerberg. "It's a rite of passage for a company in our industry," the person says, declining to be named discussing internal matters. "It's our turn." Ⓑ

—With Zheping Huang, Sarah Zheng, Olivia Carville, Daniel Flatley, Manuel Baigorri and Brody Ford







The Last-Mover Problem

A startup called Sennder is trying to bring an extremely tech-resistant industry into the age of apps

By Austin Carr

Photographs by Felix Brüggemann

The big rigs rolling along highways and beeping back into warehouses move the world's cargo. Amazon boxes, furniture crates, pallets of bananas, perhaps the gadget you're using to read this story—really, every item within your reach has likely been hauled on multiple semis. Yet this diesel-gulping industry is also a marvel of inefficiency, rife with problems that have proved shockingly immune to the magic wand of technology. For about 20% of its miles on the road, the average freight truck carries nothing. Such "empty miles" are a sad joke in the business: The planet's most shipped good is air.

Off the A4 autostrada in southwestern Poland, at a small lot lined with tractor-trailers on the outskirts of Boleslawiec, Mariusz Grzes is figuring out how to reduce his empty kilometers. Demar-Trans, his company, has a fleet of 28 trucks contracted to transport everything from car seats to dog food to plastics across Europe. Managing the loads is a daily migraine of new orders and rate negotiations and shipment tracking usually handled by email and phone. Then there's the wait to receive payment, which can take three months of processing while Grzes is forced to cover the overhead. "We struggle with getting paid all the time," he says on a November afternoon inside his four-desk headquarters, where a couple administrators and dispatchers are drowning in printed invoices and schedules.

Lately, Grzes has had better luck with Sennder Technologies GmbH, a Berlin-based startup that develops digital tools to match shippers with truck operators, known as carriers. Sennder's software is part road-freight marketplace, part fleet-management app. It offers mom and pop outfits a list of nearby loads from the likes of Anheuser-Busch InBev, Coca-Cola and Danone that Grzes can book or bid up with a click—Wroclaw to Bruges for €1,410 ($1,513), or Waldershof in eastern Germany to Périgny in coastal France for €2,500. Sennder finds profits in the sliver between what it charges shippers and what it pays to carriers. The platform, which is free to use, also offers logistics services that automate paperwork and optimize routes so there are deliveries from points A to B to C, then back from C to B to A. Since signing up in early 2021, Demar-Trans has shifted 25% of its business to Sennder. "The system is sensational," says Grzes, singling out its accounting features and quick payouts, which usually take just a week or two.

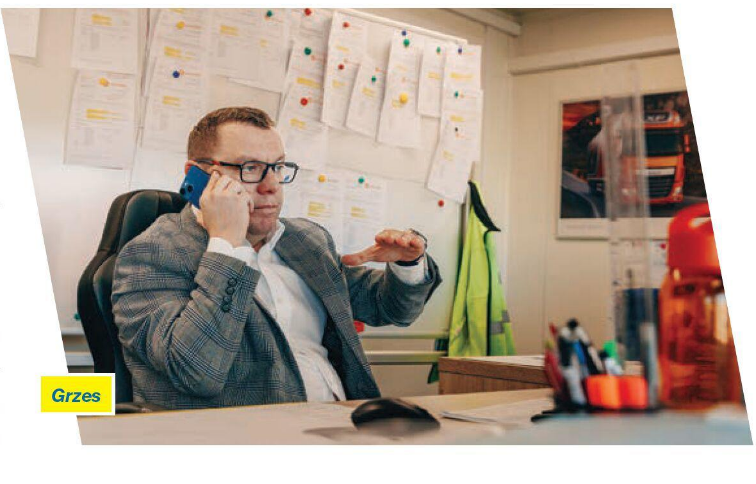
If those strides seem uninspiring compared with the autonomous and electric trucks that Elon Musk and his peers promise will soon upend the freight landscape, perhaps that's because there's a convoy-size gap between the Bay Area's ambitions and the reality on the ground. This is an enterprise that once relied on fax machines and has broadly graduated only as far as Excel and Craigslist-level exchanges. Pavel Korol, an independent truck driver from Latvia, jokes that before using Sennder's software he mostly depended on "paper apps."

Covid-era chaos has illustrated the unsustainable nature of the old ways and helped attract venture capital. Century-old incumbents such as DB Schenker and Kuehne + Nagel International AG are racing to modernize before tech-savvier rivals catch up. According to data from research firm PitchBook, total funding for supply chain tech startups from 2020 through 2022 reached $124 billion, almost double the combined amount raised over the prior three years.

The bet is that the freight industry is overdue for "Uberization." But that comparison preposterously oversimplifies the challenges ahead. Coordinating trucks isn't like ordering taxis. In fact, six months into the pandemic, Uber Technologies Inc. agreed to sell its European trucking business, which had developed its own digital platform for shippers and carriers, to Sennder in an all-stock deal that valued the unit at €900 million. "Their American model did not work in Europe," says David Nothacker, Sennder's 35-year-old co-founder and chief executive officer. "In road freight, we're going to see continental champions." In China, the early leader is Full Truck Alliance Co. Uber and Convoy Inc. are vying for the edge in the US, though Bloomberg News reported on March 8 that Uber is considering spinning off the rest of its freight division.

To make it this far in the European Union, Sennder has endured travails that reflect the unruliness of a regionalized industry. While it's raised more than €320 million and tipped its valuation beyond $1 billion, the company has had to face calamities from Brexit to the war in Ukraine on top of commercial fragmentation and good old-fashioned consumer hate. It can be enough to make pen and paper seem like the way to go. But Nothacker, a Frankfurt-born pragmatist who can sound matter-of-factly cutthroat, sees Sennder's survival as a sign it's on the right path. "Our business model is crisis-resistant," he says, stressing that people need their goods delivered in tough times more than ever. "At least for the crises we've seen."

Sennder sprouted from a university project. While seeking his MBA at the business school Insead outside Paris, Nothacker brainstormed businesses to complement BlaBlaCar, the French carpooling app. He thought empty trunks and roof racks could ferry parcels for extra cash on common passenger routes and built a website under the brand ÜberBringer. But he soon realized the cars were too unreliable and made sense only for bulky niche items like musical instruments. He and a classmate next tried transporting goods in bus storage bins. That flopped, too—a pilot partnership with German operator FlixBus failed to yield a single commercial customer in 2016. Eventually, Nothacker's classmate left for a consulting job. In 2017, ▶



Grzes

“Our business model is crisis-resistant.

◀ however, he persuaded two other consulting-world friends, Julius Koehler and Nicolaus Schefenacker, to help him create a logistics service for vans and small trucks.

In meetings with local shipping teams at Amazon.com Inc. and other e-commerce providers, the trio grasped how desperate the companies were to deliver same-day loads to smaller hinterland cities. Roughly 70% of trucks in Europe are owned by tiny shops with fewer than 10 vehicles—and most are accessible only by phone or email. To reach them, some shippers traditionally depend on third-party brokers whose pricing is opaque. That opacity is often where middlemen make their profits. “They might’ve lost efficiency by not digitizing, but they largely benefited from not having market transparency, by exploiting that information asymmetry,” says Ludwig Hausmann, a partner at McKinsey & Co. focused on logistics clients.

Big freight forwarders such as Kuehne + Nagel, which in some cases have massive fleets but generally rely on subcontractors, also had little incentive to upgrade. Cleaning up their legacy infrastructure risked messing with entrenched partners and ancillary systems for warehousing and air and sea freight. When Deutsche Post AG tried and failed to revamp the tech architecture at its subsidiary DHL Global Forwarding, the parent company ended up taking a €345 million writedown in 2015 and reverting to its old setup.

Sennder’s co-founders, then living together in a 48-square-meter (517-square-foot) apartment in Berlin, saw a chance to bypass the middlemen. They struck same-day delivery contracts with Amazon and fashion e-retailer Zalando SE, then set about recruiting carriers. At first, as they figured out how to automate delivery monitoring with a simple web-based system, they had to input shipping data (number of pallets, loading confirmations, arrival times, etc.) from the carriers. A seven-figure seed investment in 2017 from Scania Growth Capital, the venture arm of a major Swedish vehicle manufacturer, marked a stamp of approval, but winning over carriers was still a slog. Truckers would book loads only to cancel at the last minute. Nothacker remembers that he and Schefenacker once had to rent a van themselves, then rush to an 11 p.m. pickup four hours away in Erfurt and drive back to Berlin for a 3 a.m. deadline. “We already had a few problems days before and could not afford another problem,” says Nothacker, a preppy dresser who’d look out of place in a warehouse.

In 2018 they began focusing on 40-ton trucks, the big tractor-trailers typically seen on expressways. Their self-service booking site promised pickups within three hours and real-time tracking, rare in the industry. But getting drivers to share data was a hassle. Some were skeptical of GPS or preferred mailing delivery documents. Sennder later tried giving drivers Motorola smartphones with a basic app installed, but they replaced the SIM card or removed the battery when they didn’t want anyone knowing their whereabouts. Their bosses were equally reticent to change their analog ways. During a pitch at one carrier’s office, Koehler was stunned to find a landline phone in every bathroom to make sure staffers never missed a call for a new job.

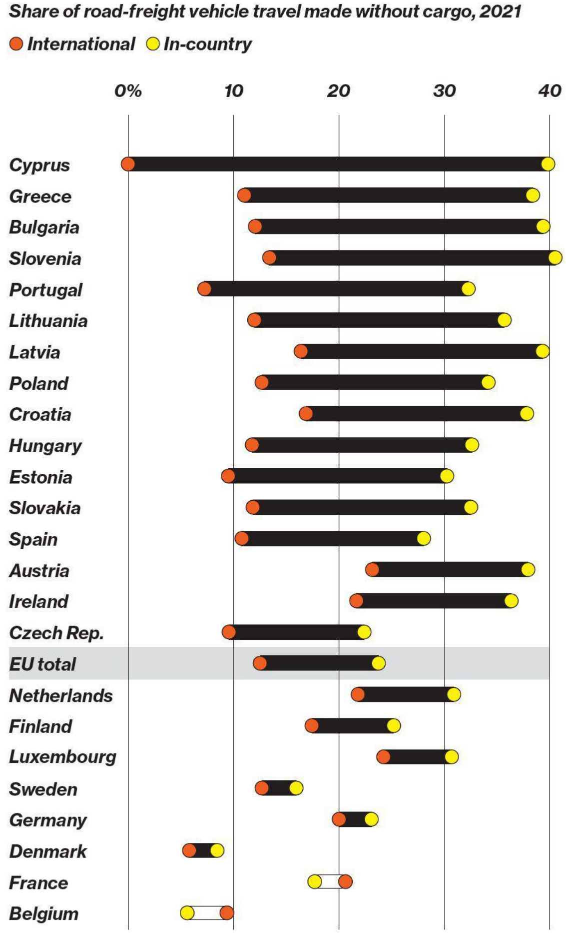
Nevertheless, revenue jumped 300% from 2018 to the next year, as Sennder proved its consistency to shippers and got more annual contracts. By mid-2019, Sennder had more than 7,500 trucks on its platform. That year, it grew to 150 employees and raised €90 million from investors including Accel and Lakestar LP.

Sennder’s timing was good. A herd of tech startups in Europe were hurtling toward the same €325 billion market, including Uber Freight and a popular rival out of Paris called Everoad. All of them had to burn barrels of cash to win over shippers. The key for these newcomers was using algorithms to map out potential load bundles that minimized empty kilometers and financial losses. Sennder’s transport management system, named Orcas (as in killer whales), was designed to spit out suggested shipping rates for carriers based on historical pricing data. But with the one-two punch of Brexit and Covid-19 in 2020, the data no longer applied. “Our machine-learning guys were ripping their hair out, like ‘Ah, our models are not working!’ ” recalls Dirk Daumann, then Sennder’s chief technology officer.

Vast swings ensued in available drivers and needs for certain goods. “We shipped so much toilet paper,” Koehler says. Complicating matters, Sennder started losing money on trips, because it had to offer drivers higher rates than it could expect to receive from its own contracts with shippers. The company took those hits to gain customer loyalty, hoping to recoup the costs within a couple of years by adding volume.

Europe’s Empty Miles

Share of road-freight vehicle travel made without cargo, 2021



EU TOTAL EXCLUDES ITALY, MALTA AND ROMANIA.
DATA: EUROSTAT


Nothacker

"We did a route analysis where it looked very red in the beginning," says Accel partner Sonali De Rycker. "Over time as you invest more in the customer or route, it lights up green."

Nothacker put some of Sennder's VC haul into sales and operations beyond Germany, including branches in Latvia, Poland and Spain. In July 2020 he inked a joint venture with Poste Italiane SpA, Italy's equivalent of the US Postal Service, to manage their full-truck loads digitally. By late 2020 Uber, facing pressure on its core taxi business in the US, sold its European freight unit to Sennder in exchange for a minority stake. "Getting the investment that we needed to build tech features unique to the needs of European customers was like pulling teeth," says Thomas Christenson, Uber Freight's general manager for Europe, who joined Sennder as its chief operating officer after the sale. Sennder also bought Everoad earlier that summer—for a song, according to several sources, after the French company ran out of cash.

On a recent visit to Sennder's well-appointed Wroclaw office in Poland, a few dozen twentysomethings are glued to PCs and laptops as music streams on a nearby speaker. At a desk piled with business cards from potential customers, carrier manager Aleksandra Kunce is reviewing her day's orders on two screens. It's her job to support Sennder's carriers in whatever way she can, which frequently means chatting with them on Skype or WhatsApp. "My colleague has one carrier from eastern Poland who won't even use email," she says, laughing.

A few rows away, Magdalena Strozek deals with similar issues on the shipper side. Handling orders for big brands such as Coke and Pringles is relatively smooth, but there are plenty of instances when Sennder's self-service apps can't process the industry's weirdness. Like that time a few Christmases ago when a guy wanted to ship a single unboxed toilet to Bulgaria, leading to a confusing string of phone calls. Many partners seem scared of Sennder's tech, even before it's automated any jobs out of existence. "This is the barrier we have to break to make the industry digital," Strozek says, flicking a fidget spinner.

As macro crises continued throughout 2021 and 2022—Covid variants, rising inflation, soaring energy costs—Nothacker says his team had "hard conversations" with clients about increasing prices. Sennder ramped up its spot business with shippers, reducing the number of annual contracts and giving it more control over day-to-day margins. It also began prebooking capacity with a "chartered fleet" of independent carriers, to lock in access to drivers over 6- to 12-month stretches and mitigate possible truck shortages. Putin's war didn't help. "Almost 10% of all truck drivers came from Ukraine or Russia," Nothacker says.

Even still, he says, Sennder's No. 1 challenge remains tech adoption. Instead of using Orcas themselves, truckers often email delivery documentation or phone in updates, data which Sennder employees type in manually, raising the question of whether its service is really much more innovative than that of traditional freight companies. Since 2020, Sennder has ballooned from 200 employees to over 1,000 at 11 offices, with two-thirds of them focused on sales, operations and marketing. One former senior logistics specialist, speaking on condition of anonymity for fear of professional reprisals, describes the company as a beautifully wrapped package with the same candy inside as everyone else.

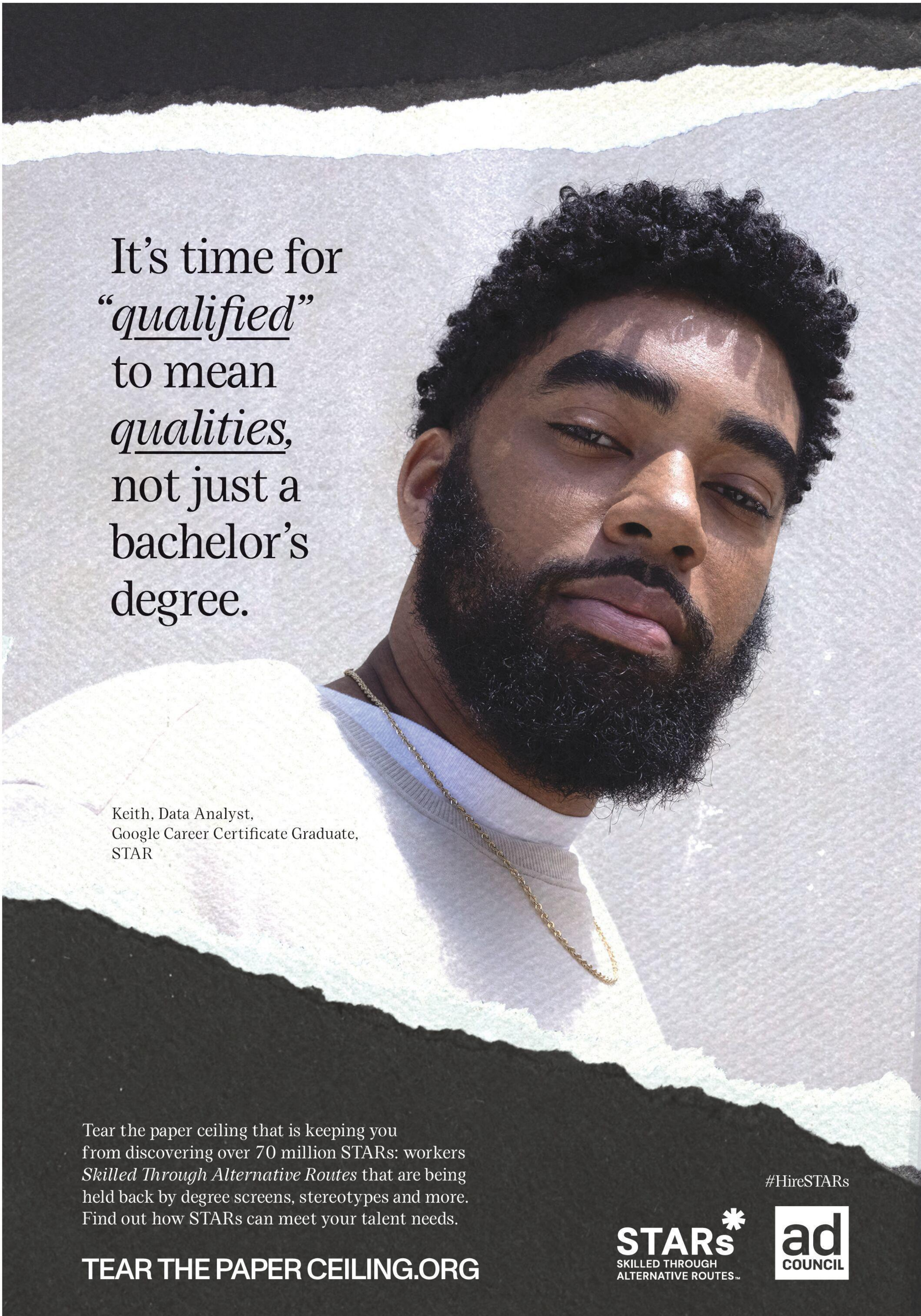
Sennder execs say they're committed to winning carriers' trust and learning from mistakes. Philip Jonas, vice president of product, points to an accounting feature he designed for Orcas users. "I thought there needed to be bar graphs showing your loads over months and how much we paid you out—these super beautiful dashboards," he says. "The majority of people said they never used it!"

Sennder isn't alone in struggling to scale without old-school support. Uber Freight CEO Lior Ron says that while the US is more open to tech than Europe, carriers still need staffers from his Chicago headquarters "picking up the phone, walking them through the first load and then hand-holding them on the second and third loads." At first, Ron says, they're using Uber's "most mundane functionality." But by "the 15th load, they're like, 'Oh, I can press this button and get a contract?' "

Jonas's team likewise found that users gravitated to basic transactional features that didn't have 500 buttons. "The interface, when I look at it now, looks shitty, but for them it's fine," he says. It's also evident customers need concrete incentives to try out new stuff. Sennder has added features guiding truckers to safe places to shower and sleep in hopes of enticing them to use its mapping system, for example. To encourage carriers to upload their delivery documents digitally, the company guarantees payments within 30 days of submission, or within 72 hours for a 3% fee. "We convert your PDFs to money," Jonas says.

Features like these may encourage broader adoption and increase efficiency, but if Sennder and its rivals are to live up to their investors' long-term expectations, they'll need to push shippers and carriers even harder toward automation. Nothacker, who says revenue doubled last year, sees reason for optimism on this front. The vast majority of Sennder's customers have now automated at least one aspect of their operations—whether it's dispatching, load completion or payments. The company hopes such unsexy offerings as fuel cards and tire discounts will attract more mom and pop carriers to Sennder's platform as it tries to work around their old-fashioned habits. Orcas is smart enough to scrape data automatically from emails, Excel spreadsheets and PDFs, Nothacker says.

Back at Demar-Trans in Boleslawiec, there's no doubt that many processes still need digitization. The company's bookings and invoices with Sennder are mostly streamlined, but that still hasn't stopped employees from printing out about 15 order sheets and sticking them up on a whiteboard. They're easier to read that way. Grzes, the owner, hustles outside to show off his fleet of trailers, the first of which he inherited from his father, a driver himself, in 2007. He doesn't believe the back-end processes for road freight will be fully automated any faster than the driving itself. Standing near some used tires, he says, "Maybe my grandson will live to see those times." B


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What I Learned Working at a Hawaiian Mega-Resort

Nine wild secrets from the staff at Turtle Bay, who have to manage everyone from haughty honeymooners to go-go-dancing golfers. By Brandon Presser
Illustrations by Mark Wang

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A look inside Noma's Kyoto pop-up

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Recycled running shoes that go nowhere?

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The best foldable commuting bike

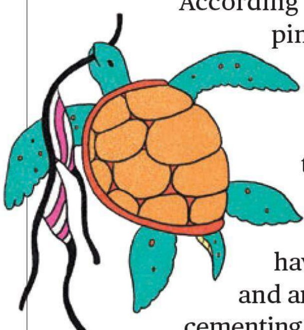
March 20, 2023

Edited by
Chris Rovzar

Businessweek.com

In 1959, Hawaii became a state—just in time for the advent of mainstream commercial flying. Almost immediately, travel agents began to wallpaper their offices in tiki-themed posters, promising Polynesian breezes and peachy pink sand. And where did their clients go in droves? The original monolith to pleasure in paradise: Del Webb's Kuilima Resort Hotel & Country Club, now known as Turtle Bay Resort.

To call Turtle Bay an icon would be an understatement—more than 150 movies and TV shows have been filmed on its 1,300 acres, including *Lost*, *Pirates of the Caribbean*, *NCIS*, *The Hunger Games* and cult comedy favorite *Forgetting Sarah Marshall*. Additionally, the hotel's beaches boast one of the world's best surf schools, the Jamie O'Brien Surf Experience.



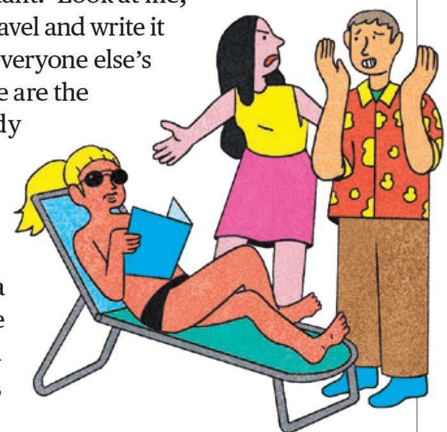
According to some accounts, the thumb-and-pinky shaka wave was invented in the area in the early 1900s when it was nothing but a sugar mill, by an employee waving in transport trains who was missing his middle three fingers.

Today the honeymoon and celeb haven is fresh off its 50th anniversary and an ambitious $250 million renovation, cementing its reputation as Oahu's ultimate getaway. It was the perfect time for me to sneak through its hallowed gates to understand how the property's elite team manages the volcanic demands from its thousands of guests, all wanting their own specific version of island idyll. Donning my bright blue aloha button-down, I spent a week working among the resort's stewards, as the staff are called, keeping the peace between puritans and porn stars at the beach, fending off stealth buffet moochers and combing the golf course's sand traps for any wayward partygoers left over from the night before. I also heard some epic tales of misbehaviors from yesteryear. (Some sources are quoted anonymously to protect their relationships with guests.) Turns out, not everyone in paradise is an angel.

1. Got a Favorite Character From *White Lotus*? They're All Here



"Have you ever seen *White Lotus*?" jokes Steven Harris, a manager at the surf school. He says Turtle Bay is "the same thing, but without the murders." He's not wrong. Other stewards confirm it, too, although the show itself was filmed at the Four Seasons Resort Maui at Wailea. There are teenagers throwing tantrums in the lobby when parents ask them to put down their phone, as well as "guests taking Zoom calls with multiple computers set up in the lounge like they're super important: 'Look at me, I'm doing work, I get to travel and write it off of my taxes and ruin everyone else's holiday!' " And then there are the honeymooners already showing signs of marital trouble. "Sometimes the front desk feels like a psychologist's office," notes Sacha Wilkins, a guest service supervisor who's been a caring ear for weepy, regretful newlyweds.



Remember Jennifer Coolidge's Tanya McQuoid overdosing on the breakfast spread? That's real, too. Servers estimate that guests whose reservations include all-you-can-eat access at the Ocean Club Lounge consume 5,000 to 6,000 calories a day—and that's before the macadamia nuts. Some guests aren't prudish about nabbing bits for later: The boldest buffet ninjas will walk in with their own Tupperware or walk out with entire trays of eggs Benedict.

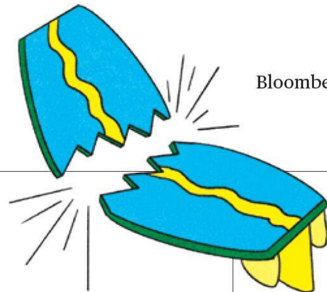
Sex workers, as in Season 2 of the show, have been known to make appearances as well, even at breakfast. "They are always fun," says another steward. One repeat visitor is "a high-class call girl from Waikiki, always with a different 65-year-old guy who is out here on business—maybe married or maybe not. In the morning she comes down in her full-blown [evening] costume. She's here enough that you'd think she'd wear something more discreet."

2. Honeymooners Think They're VIPs. They're Not

How do you know if a couple is on a honeymoon? They tell you. "They're like parrots," jokes activity coordinator Alohilani Drummondo, "saying 'it's my honeymoon' to anyone who will listen."

That doesn't make them special. "In 10 check-ins, three or four are honeymoons, three or four are birthdays, around two are anniversaries, and one is a babymoon," says Wilkins. They all want a room upgrade, and 1 in 5 will try to haggle on the price of an oceanfront bungalow. Instead, many of them get personalized welcome amenities, like green juices or charcuterie boards, along with handwritten notes from Maryam Zakeri, Turtle Bay's VIP manager. On a single shift, I delivered 25 of them—all to guests celebrating an anniversary.

Honeymooners tend to be gracious and relaxed…until it rains. When that happens, staff set up games and Wii



consoles in interior spaces and turn the ballroom into a movie theater. But it doesn't stop some from going nuclear.

The most dramatic rain-related complaint on record, remembers resort manager Joey Woofter, was when a couple demanded that Turtle Bay shell out for their stay at a nearby resort with reportedly less cloud cover (not true–it was raining everywhere). Another couple wanted a full refund, plus a five-night credit for a honeymoon redo.

"At least 20 people complain about the weather each day," notes Drummondo. "It's too hot, too cold, too cloudy, or the waves are too big–and around half of those guests want something free as compensation."

3. Everyone Gets Super Superstitious



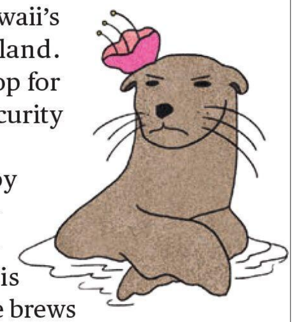
Remember the Hawaii episode of *The Brady Bunch*, when Bobby takes a cursed tiki idol and things go terribly wrong? Well, apparently for many Turtle Bay guests, the hex is real. It's called Pele's Curse.

"I receive packages all the time from guests returning stones, sand and shells," says Sarah Sundby, the resort's purchasing manager. The repentant patrons usually include a detailed apology spelling out the bad luck that's followed them home. (One two-pager I saw read like the Book of Job, with fits of illness and a real-life dark cloud that wouldn't go away.) Those parcels get routed to Sundby's office, where I was staggered to see a mountain of lava rocks and bits of coral, all waiting to be dumped back onto the shore.

That wasn't my only encounter with the supernatural. Ghost stories are commonplace across the archipelago, and Turtle Bay is no exception; the resort is set on crown land (formerly owned by the Hawaiian royal family), including several protected burial grounds. One landscaper says she's seen three ghosts, including the spirit of a young woman who hovers near the golf course: "I say aloha to her every day on my morning runs," she says. A Hollywood cameraman who's a frequent guest always requests Room 624–he believes it to be inhabited by a benevolent otherworldly presence.

4. The Beach Is for Wildlife—and Wild Guests

Turtle Bay maintains a 650-acre conservation area for nesting albatross and monk seals, the size of Waikiki's entire hotel zone. But its beaches, like all of Hawaii's shores, are considered public land. That makes them a unique backdrop for culture clashes that require the security team's intervention.

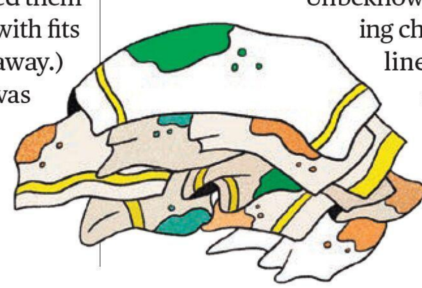


Complaints are often made by guests creeped out by one Speedo-clad regular who lays out a menagerie of stuffed animals around his beach towel. But more often trouble brews when, say, a gal from Orange County, California, bearing only a strand of dental floss, sets up shop next to a Mormon patriarch from Utah. (They're both common demographics here.) Further grievances inevitably roll in when European guests sunbathe topless–technically not against the rules. According to the fine print, Hawaiian law requires only reproductive organs to be covered, but topless tanners usually cover up if asked.

Security is also called to the beach for real wildlife sightings. "We work with marine conservation agencies to check if our monk seals are birthing," says resort manager Woofter, whose team can then cordon off the area to keep tourists away. A recent urgent call had one security officer running down to a patch of sand right next to the hotel block, rope in hand, ready to protect a pregnant-seeming seal that had been spotted and called in. Reader, it was a nude sunbather.

5. Five Hundred Pool Towels Are Stolen Each Month

And that's a lowball estimate, wagers Toni Cano, one of the senior members of Turtle Bay Resort's housekeeping team. Unbeknownst to guests, there are tiny tracking chips woven into the seams of hotel linens. They're intended to trace clean and dirty inventory as it moves through certain thresholds on the property–but also to make it easy to figure out how many items have been removed from the grounds. ▶



◀ At $9 a towel, plus $3 in shipping per unit, Cano spends well over $72,000 on replacement beach towels a year. (Guests never pay for missing stock, but back when the towels bore the name of the resort in large print, the replacements got billed to the sales team. "They made for great advertising!" Cano argues.)



Satin hangers have started to go fast, too. "I bought 5,400 in February," Cano says, "and I'm already being asked to buy more." Ditto silverware, which gets replenished at a rate of 40 se-ts per month. "It's always the teaspoons and the forks, never the knives," says Sundby, with a sigh of relief. Altogether the resort spends an estimated $150,000 a year simply on restocking stolen goods.

6. The Golf Course Gets Reckless

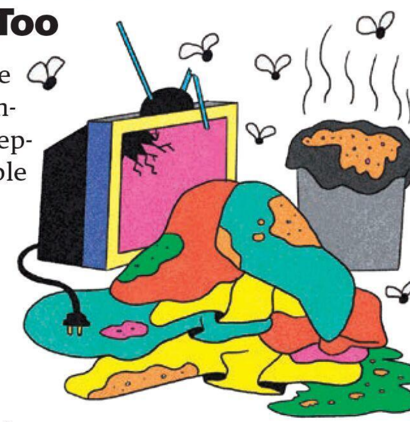


"Golf has surged in popularity because of the pandemic," says Travis Joerger, director of golf. "It's no longer an old-man sport." To wit: Before Covid-19, women made up only 1 in 10 golfers at the resort, and now that's up to around 3 in 10. The demographic is much younger as well, with a slew of 25- to 35-year-olds on the course. Maybe that explains the recent uptick in X-rated gameplay. "You're out in the middle of nowhere, so people think they can get away with a lot," Joerger says.

Wedding groups are a major red flag for the cadre of golf pros; many try to stuff their club bags full of alcohol and take their bachelor parties to the greens. For one group, all the female caddies were actually go-go dancers, and they performed out on the fairway, the grounds crew reports. Couples have been caught skinny-dipping and taking care of business in the course bathrooms, or in the sand traps in the wee hours of the morning.

The worst guests? The wannabe influencers. They're so desperate to create video content that goes viral that they set up contrived situations to flip their golf carts, forgetting that the buggies have state-of-the-art GPS technology that tracks their movement and pauses, signaling exactly when and where a vehicle gets toppled. "A guy will drive super fast and turn and jump out to spin the car," says Joerger. "And they don't tag us [on Instagram], but we see our logo on the cart and it's a small island, so we know exactly who they are and can send them a bill to fix it."

7. Housekeepers Catch Some Crazy Things, Too



At Turtle Bay, each of the 408 rooms counts as a single "credit" for housekeepers, who are responsible for 15 credits per eight-hour shift; the 42 oceanfront bungalows count double. As the newest housekeeper, I was responsible for the same amount. Subtract a morning meeting and lunch break, and that's an average of 30 minutes per room—including a full disinfecting of bathrooms and cleaning sand from sliding-door tracks with a paintbrush, as well as a daily "special focus" project, such as scrubbing grout or spot-checking carpets.

And you know those accent pillows that adorn the bed when you check in that you inevitably chuck on the floor? Those are only removed for cleaning every 45 to 120 days unless there's visible wear and tear. Same goes for comforters. Mattresses are turned or flipped every two months.

More is needed for the dirtiest of guests. Cano estimates that the staff finds vomit in about 20% of rooms and that full ragers happen roughly once a month, leaving trash everywhere and "cupcakes that have been smashed into the carpet." In one record-setting instance, a drunk guest apparently lost total control of his bowels; every last square foot of carpeting and upholstery had to be replaced.

For all this, housekeeping tips usually run around $5 per room per night—$5 more than I earned per room during my shift as a bellman carting luggage around. (Typical, I was told!) And there aren't any finders-keepers bonuses, either. The hotel maintains a lost-and-found system, so items can be sent back to guests; it's mostly made up of teddy bears,

which tend to go on field trips with the bed linens to an off-site laundry facility. Leftover beer or liquor gets dumped. Individually wrapped snacks get chucked, too, following one incident in which the "whole staff got accidentally high" on beautifully decorated cookies—party favors from a gender reveal party, they innocently thought.

8. The Concierge Can't Perform Magic, But That Doesn't Stop Guests From Asking



At the concierge desk, I was relieved that most people had straightforward transport or restaurant reservation requests—though there were definitely outliers. I actually sympathized with the guest who brought a decibel meter and demanded to measure the noise of the air conditioner in several rooms before picking one. Sleep is important! But I couldn't wrap my head around the requests of those who insisted on being picked up for dinner on horseback, or the couple who requested a baby monitor so they could go off-property without hiring a babysitter for their 6-month-old.

Sometimes phone requests can be even weirder than face-to-face ones. "We once had a guy call the concierge with his GPS coordinates [in the middle of nowhere] and ask if someone could come bring him a mai tai," says front office manager Madeline Pilch. "We didn't even know if he was staying at the hotel." The request was not fulfilled.

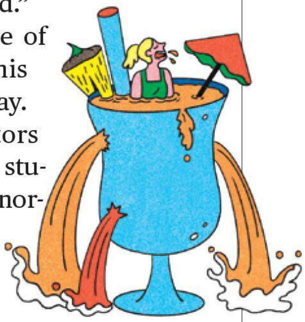
Even stranger was the recent A-list entertainer who booked an 11-night stay and then never showed up. Apparently it's the celebrity version of snagging two different restaurant reservations for the same night—and not an uncommon practice. In this case the backup plan cost more than $40,000.

9. Surfing Can Be a Contact Sport



"Surfing is a big priority for many of our staff," says Woofter, who balances timetables to give his stewards the opportunity to catch a wave before or after their shifts. (One of my fellow bellmen, for instance, has won multiple world surfing championships.)

For pupils at the on-site surf school, the sport's appeal is, ahem, not always about athletics. Take the script detailed to me by my fellow instructors—a flirting *pas de deux*—when a woman arrives for her lesson with her male instructor. She calls: "Look at how ugly my bikini is on me," and he responds: "No way, you're totally hotter than my ex-girlfriend."



"It happens every time," notes one of the surf pros, who drops the "ex" in his response if he's not feeling flirty that day. As third-party operators, the instructors have more leeway to engage with their students—taking visitors out on off-hours snorkeling trips or hitting the bar—though they'll never initiate extracurricular contact.

"It definitely happens that women give us their room number," says another surf pro. Those offers, he says, are usually declined out of professional courtesy. But every instructor I spoke with seemed to know someone else who'd caught that break at least once.

The staff estimates that around 90% of surf students talk a big game about surfing back at home—but the waves on Oahu are far more powerful than the ones along the mainland. "It can be a really humbling experience," says general manager Jason Hdez. "We've had people fly in all of their equipment and then not even be able to paddle out [far enough]." ❸


Ingredients during the menu testing phase included "mind-boggling" citrus fruits, herbs and seafood

How Noma Will Blossom In Kyoto

The best restaurant in the world just began its second pop-up in Japan. Here's what's cooking

By Oscar Boyd

Photographs by Benjamin Beechey

When they are seated at Noma Kyoto, which opened on March 15, guests can expect to see dishes such as hot pot with a broth of smoked mekabu (the stems of wakame seaweed) and mountain vegetables with a vinaigrette of Japanese spiny lobster brain and boar fat. They'll also be served dishes with freshly made yuba, or tofu skin, rose


Chefs Redzepi (far left), Takahashi, Soberg and Frebel

petals and, controversially for René Redzepi, the revered Japanese staple, rice.

"Last time we didn't dare cook rice," says the chef and co-owner of the world-famous Copenhagen restaurant Noma, referring to his first pop-up in Japan. "What could we add to the table that would surprise people?" This time, he says, "I know that we have to."

Noma, which has topped the World's 50 Best Restaurants list five times, most recently in 2021, will run the Kyoto residency for 10 weeks, until May 20. Tickets sold out in 37 minutes when they went on sale in November.

The restaurant's previous pop-up in Japan was in 2015 at the Mandarin Oriental Tokyo, pairing Japanese ingredients and techniques with the experimental Nordic cooking for which Noma is known—including foraged flora, fermented pastes and clever incorporations of unconventional ingredients like tree bark and ants. "Everything about this one is more ambitious," says Redzepi, speaking from the kitchen of the Ace Hotel. "For the locals, we want them to feel like a spaceship landed in their city."

While we talk, Redzepi is experimenting with a dish of raw ama-ebi (sweet shrimp) and Kyoto-grown peas as he flits between the phone and the kitchen to sample its latest variation. A squad of 11 research chefs, sommeliers, ingredient scouts and project managers began work in Kyoto in January. The full Noma team of 95 arrived in early March. The Copenhagen flagship is closed during the pop-up—and will close permanently at the end of 2024.

The residency opens in one of Japan's most vibrant seasons. While Kyoto prepares itself for the annual cherry blossom crowds, which start in mid-March, the kitchen has been out combing the mountains above the city. Sansai (wild vegetables) emerge with the warmer weather, and the team is working with expert foragers including Shigetake and Mari Fukunaga to source the fleeting harvests of bamboo shoots, fiddleheads and delicate mountain herbs.

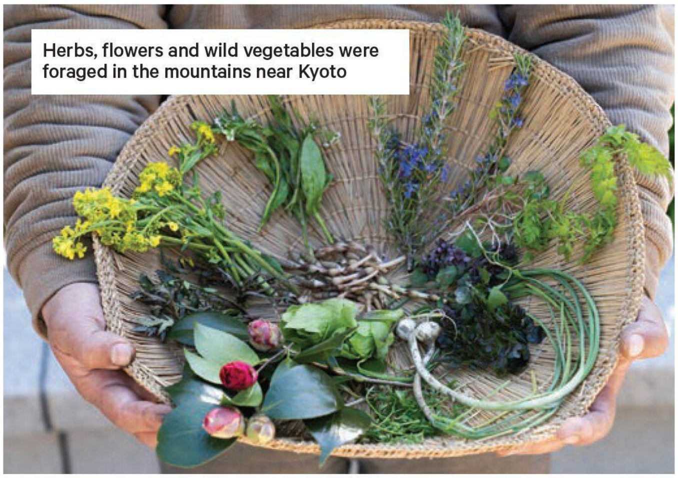
"We will have to do a dance with the season, finding ingredients further north as the pop-up progresses," says Thomas Frebel, Redzepi's partner in the restaurant. "But maybe at some point we'll also say, 'Let's look at what's around us again and change the menu.'"



Seafood was sourced from across Japan



Chef Shui Ishizaka experiments with seaweed



Herbs, flowers and wild vegetables were foraged in the mountains near Kyoto

Frebel was integral to the 2015 pop-up. Inspired by that experience, he launched the Noma offshoot Inua in Tokyo in 2018, which received two Michelin stars before being permanently shuttered by Covid-19. Several of the Inua team have joined Frebel in Kyoto, developing the menu alongside Noma test kitchen chefs Mette Brink Soberg and Junichi Takahashi. Yoshihiro Murata—chef-owner of Kyoto's three-Michelin-starred Kikunoi and a mentor to Redzepi—is also on standby for advice.

Noma Kyoto is taking over the restaurant in the Kengo Kuma-designed Ace Hotel, not far from the city's 400-year-old Nishiki Market. It will serve 120 guests a day, split between lunch and dinner. In the remodeled dining area, colored tatami from a Kyoto-based matmaker hang along the walls and ceiling; mushroom-covered logs, ferns, acorns and other materials collected from nearby forests provide additional decor. Noma commissioned custom tableware—including wickerware, wooden bowls and bamboo spoons—for the residency, chosen from more than 300 items handcrafted by designers in Denmark and Japan.

Redzepi says he always wanted to host a second residency in Japan but felt "like a mosquito" in the vastness of Tokyo. The team pondered locations as remote as the island of Ishigaki, almost 2,000 kilometers (1,243 miles) southwest of the capital, but Kyoto was the prime candidate because of its culinary history and the availability of schools for the team's children.

"My first wish was to go to Kyoto because it's the birthplace of kaiseki," says Redzepi, referring to a form of multicourse dining that traces its roots to the eighth century. "The modern tasting menu could have its origins in Japan. And perhaps, through osmosis, Noma can trace its origins to this city."

The menu is also inspired by shojin ryori, the vegetarian cuisine found in Buddhist temples, which Redzepi encountered in November while walking the Shikoku pilgrimage, a 1,200-kilometer journey between 88 of the island's temples. Many dishes are plant-based and feature what he calls Japan's "mind-boggling" array of citrus fruits, as well as goma dofu, a tofu-like temple staple made from ground sesame.

Flying the entire Noma team to Kyoto and providing them with accommodations during cherry blossom season is a big expense. Redzepi expects the "profit to be the experience," even with partners such as Japan Airlines, telecommunications company NTT and American Express.

The cost is also borne out in the meal's price: €775 ($820) per person for the combined food and drink pairing.

"When you're at home, it's hard to step out of the routine. So to find ourselves here, wow, it gives us a different energy," Redzepi says. "And I think if we feel that, then the guests will feel it, too." Ⓑ



Running in Circles

A subscription running shoe program aims to fight footwear waste

By Naureen Malik

Coming out of the pandemic, which forced road races to be canceled around the world, the biggest, softest running shoes were a salve–and motivation–in what was a very painful return to marathon training for many. That's why I gave ultra-cushioned sneakers a chance after resisting them for years.

And boy, did the stripped-down, crisp, off-white Cloudneo from Switzerland's On AG feel odd at first; the springy, curved soles mimic rockers on a chair with the heel and toe box off the ground. But the shoes quickly filled a gap in my collection: sneakers that look cool enough to wear casually or to work, while also doubling up for runs or a workout.

More than that, though, as an energy reporter writing about climate change, I was eager to test the Cloudneos in my personal quest to find sneakers that do less damage to the environment. Americans buy about 1 billion pairs of sneakers a year, with running shoes coming in at 15% of the $53 billion in retail sales, according to NPD Group Inc. On, which was co-founded by multiple Ironman winner Olivier Bernhard and counts Roger Federer as an investor, spent the better part of five years designing the high-performance Cloudneos. The key proposition: You only lease the dye-free, recyclable shoes.

Runners pay a $30 monthly subscription fee to run them into the ground and return them for a fresh pair whenever they need. The program is dubbed Cyclon.

It means the shoes cost about $180 under normal wear and tear, or a dollar per day for the minimum six-month commitment, which On expects to equate to 300 to 500 miles on average. Eight months in, mine are going strong, with one to three short runs a week on city streets or an easy trail plus lots of walking, making their effective price $240 (and counting). These running shoes are more expensive than others, though you could, of course, swap them out more often to get a better use-per-dollar ratio, environment concerns notwithstanding.

Can you seriously run in them?

Upon lacing up the Cloudneos for the first time, I noticed how obvious the bounce in the heel was, as it almost cannonballed me down a set of subway stairs. I quickly acclimated to the curved sole and learned to use it for speed workouts.

The cavity in the midsole housing looks like a tectonic plate rather than On's usual "cloud" pockets and colorful structures. The shoe is mostly made with castor beans from chemical manufacturer Arkema Global, even that midsole plate instead of carbon fiber that's popular these days. Running shoe rivals Mizuno Corp. and Nike Inc. (the latter's $250 Vaporfly was worn in an attempt to break the two-hour marathon barrier) have also used Arkema's materials.

I was expecting the Cloudneos to feel as soft as the Nike React Infinity or New Balance Fresh Foam sneakers, both $160, and I was ready to relegate them to business casual wear, but the cushy-yet-firm sole made the shoes an unexpected joy after I got over the worst of the getting-back-into-running suffering. That said, you have to be disciplined about form, picking up your knees and having a solid overall stride, to take advantage of their shape. Other more cushiony shoes, like my $165 neon-colored Hokas, are more forgiving with their huge soles, allowing you to cruise through bumps and missteps.

As I regained mileage, the Cloudneos became really fun. I ran 7 miles in a single speed workout and could launch off the curves of the soles. After slogging through two painful Yasso 800s (running 800-meter intervals with a short jog or walk in between), I knew the training was finally paying off because I shot out of my comfort zone to push my pace, kept it up and didn't realize I had run a couple of extra intervals.

The Cloudneos have some obvious, though typical, annoyances. They're not great for running in the rain, especially not on slick, hilly roads. They're on the narrow side of On's offerings, so you may need to size up. And wow, can the Cloudneos screech on smooth surfaces of airports or building lobbies, and even not-so-smooth surfaces. They also will–like all pale shoes–scuff up pretty fast, but they're machine-washable.

The biggest issue, however, is in On's hands: The company doesn't know yet what it will do with the shredded-up shoes. Like the overhyped recycle-anything endeavors of TerraCycle Inc., it's a need waiting for a solution.

Will the Cloudneos find new life as another pair of sneakers, or are they destined for cable tubing, automobile parts or household goods? It's too early to tell, On says. From the first batch of shoes that started going out last summer, it's waiting for 1,500 pairs to be returned so it can figure it out.

I care that the shoes are great, but I care more about a zero-waste life cycle. When that happens, I'll know the Cloudneos are a real step in the right direction. Ⓑ

ILLUSTRATION BY HOU CHAN

Ride, Collapse, Ride Again

The Hummingbird single-speed folding bike is as light and efficient as its name implies

By Hannah Elliott
Photograph by Christina Poku



To be successful, a foldable commuter bike has three requirements: It must be lightweight enough to carry; it must quickly collapse small enough to fit under a desk or dinner table; and it must zip you along the street, almost like a bike with wheels twice as big. If it's lovely, all the better—but you're not riding a foldable bicycle to look cool. At a little less than 15 pounds, the lightest option on the market is the Hummingbird, and it meets all three standards while being beautiful to boot. The bike boasts 16-inch wheels and a carbon-fiber frame, and it's plenty zippy. The single-speed version (£3,495, or $4,260) comes in yellow, black or carbon. (A flax-based plant-fiber frame is pictured here.) The company also makes multispeed and battery-powered versions, all of which fold down to the size of an airplane carry-on.

THE COMPETITION

• The affordable and charming Barcelona ($700) from Citizen Bike Inc. has three speeds and a curved alloy frame. Weighing 31 pounds and having 20-inch wheels, it's larger and heavier than most foldables and therefore feels more solid.
• Minimalists will like the Brompton A Line ($1,150). It's 25 pounds and available in any color as long as you like white. The micro-alloy tubed body folds into a box a bit larger than 2 feet wide and 2 feet tall. The three gears are sealed in the middle of the rear wheel, protected from water and grit.
• With 10 speeds, the Origami Swift ($899) will offer the widest gear range of anything on the market when deliveries begin in May. It also offers hydraulic disc brakes, wide handlebars and a rear rack that lets the bike stand in its folded position.

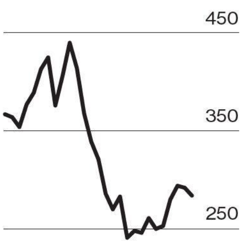
THE CASE

With a higher price than its peers, the Hummingbird had better excel in design and performance–and it does. The individually numbered, single-piece frame is made by hand in the same Buckinghamshire composites factory that provides carbon fiber for the likes of Aston Martin, Bentley, Land Rover and McLaren. (A custom paint job can be had for £500 extra.) Its swingarm is made from solid lightweight aluminum and anodized to ensure a long-lasting finish. The seat pole can hide entirely within the frame, and the pedals are removable. A single pin clips into place to lock the bike and make it easy to carry onto public transport; to unfold it again, simply release the rear wheel, drop the seat, clip the handlebars under the swingarm and go. *£3,495, hummingbirdbike.com*

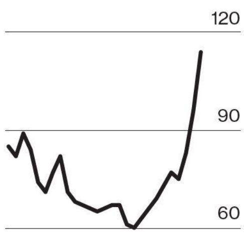
Danger on the Rails

The tragedy in East Palestine, Ohio, has drawn attention to cargo on US railroads, which carry 28% of the country's freight in ton-miles and 16% of its hazardous materials. ——*Dorothy Gambrell*

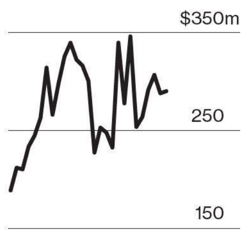
US railroad accidents per 100 million train miles, all train traffic



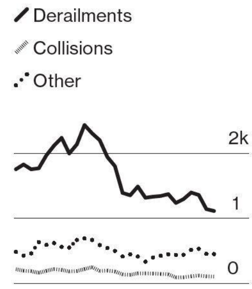
US railroad fatalities per 100 million train miles



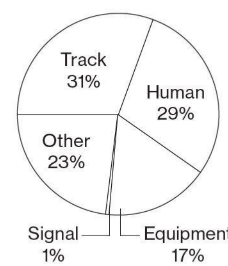
Property damage from US rail accidents



Types of accidents

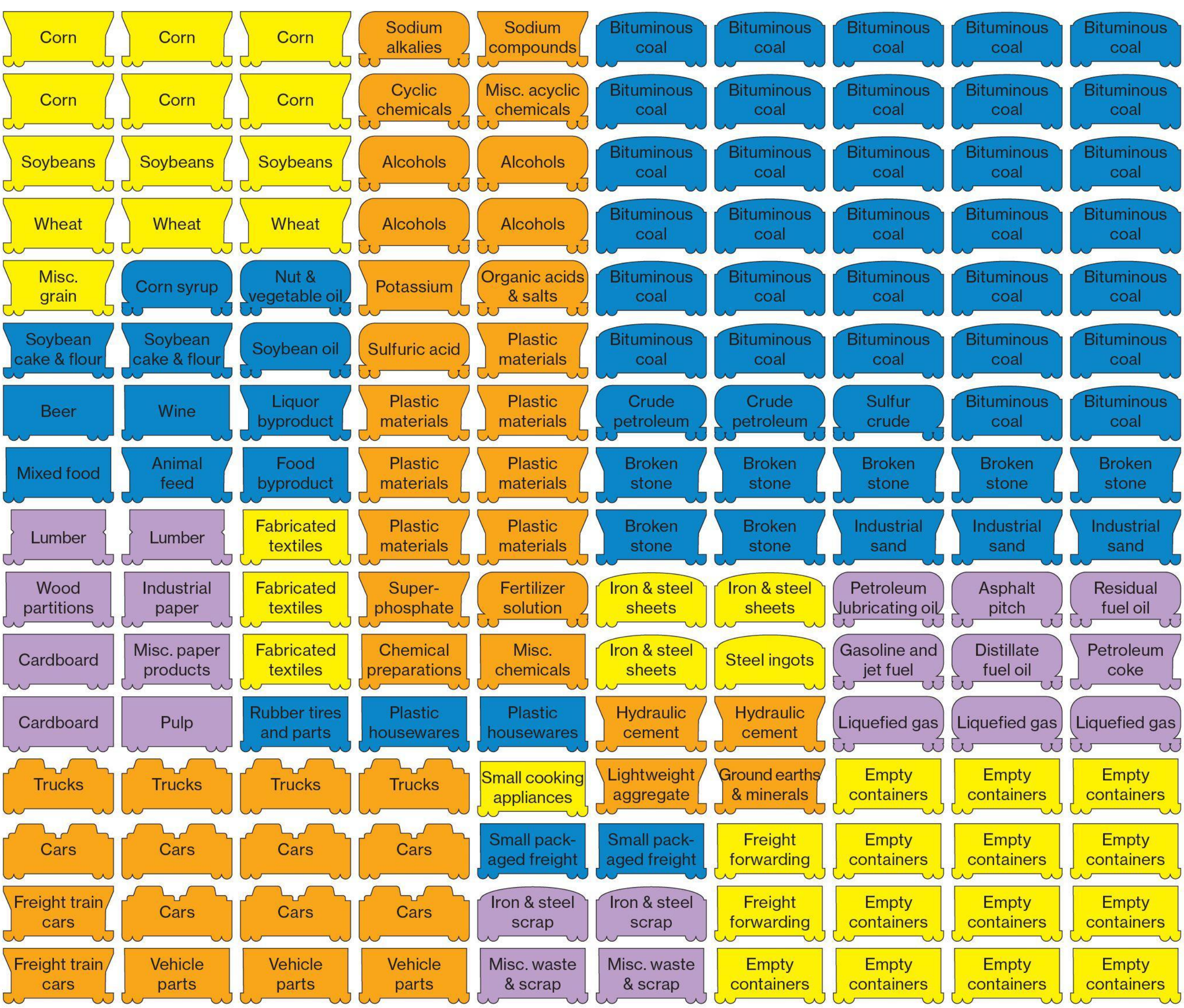


Property damage by accident cause, 2018-2022



What US freight trains are carrying

Each car represents 122k cars run by Class I freight railroads in 2021



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